AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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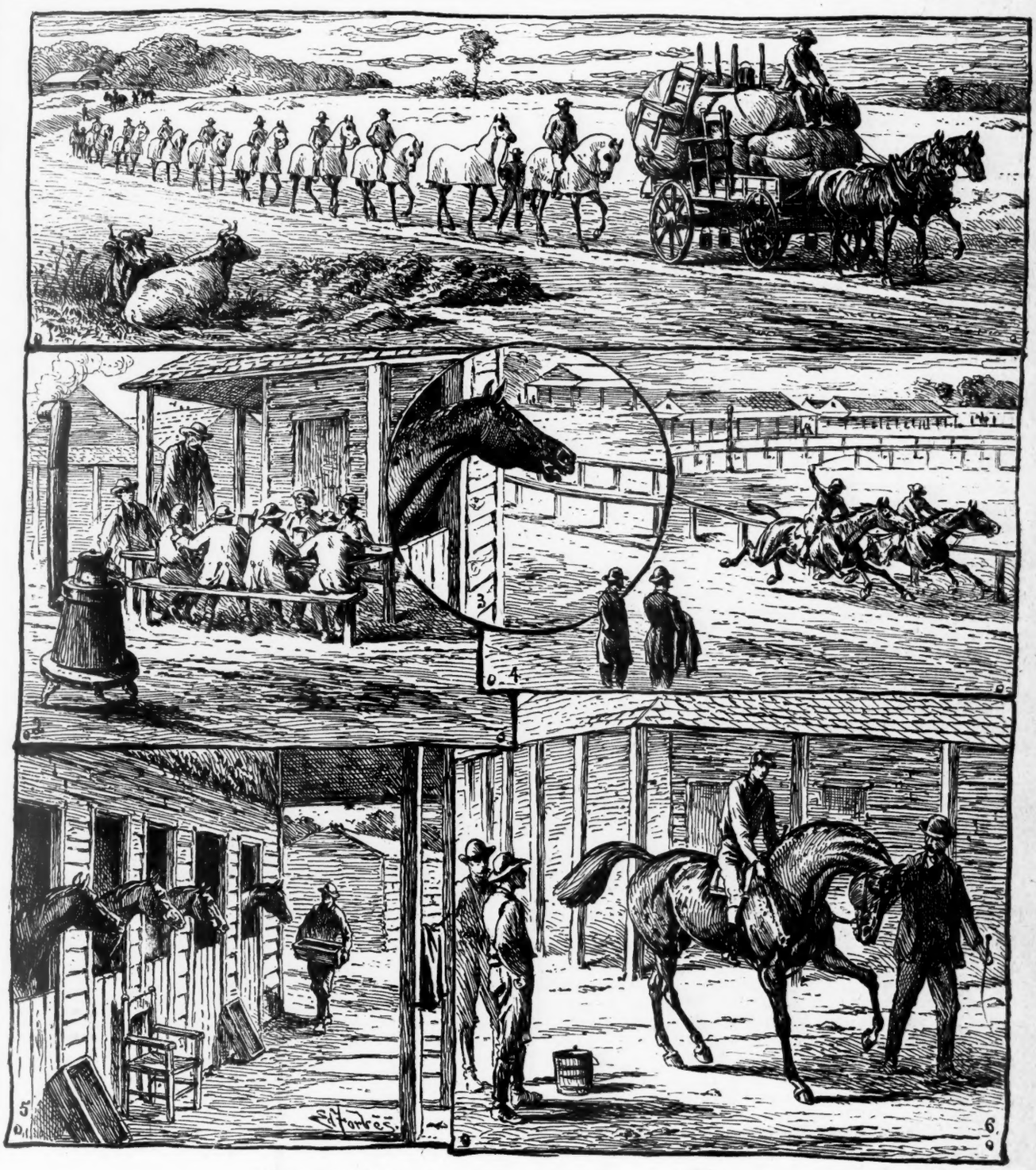

LIFE SCENES OF THE SEASON'S FAVORITES.

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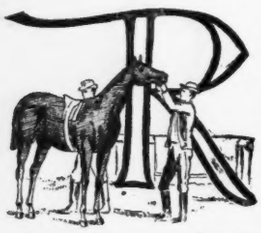
INCIDENTS OF THE RACING SEASON.



RACING, however exhilarating it may be to the spectators, is not unmingled fun for the grooms, stable-men, trainers, and jockeys. The care of the high-bred horses, and keeping them constantly in the best condition, involve much labor, watchfulness, and hardship. The greatest care must be exercised in providing them with food and water. Nothing but the choicest qualities of forage and grain are placed before them, and the method of feeding is reduced to an exact system. The water they drink is often brought long distances, for a change from soft to hard water may involve serious if not fatal consequences. The entire system of daily exercise, grooming, and care is skillfully designed to keep every horse "on edge"—that is at the summit of his powers, and ready at any time, when called upon, to run his best. Then unceasing vigilance is required, night and day, not only to guard against fire and other accidents, but also willful malice of any evil-disposed persons who would poison or injure a horse against which they had pending bets. Taking one consideration with another, the life of a groom or jockey in a racing stable is not altogether a happy one, yet there are many sources of keen enjoyment for one who really loves a horse. When a horse comes in the winner of a race, every man connected with the stable, from the stud-groom and jockey-rider to the humblest strapper shares the feeling of pride and exultation with the owner himself. There is a veterinary practitioner who began his career as a stable-boy in a racing stable near New York. He was successively promoted to be groom, jockey, and at length graduated from the American Veterinary College, after having pursued a full course of study through his own energy and industry. Our frontispiece shows some of the phases in the life of race-horses during the season. At the top of the picture (1) is a night movement such as may often be seen during the summer and autumn months. The races are over at one track; the baggage, horse-clothing and various paraphernalia are loaded on a heavy wagon, which starts off for the next track, followed by a long "string" of thoroughbreds. At the left center (2) are seen the grooms and stable-men at breakfast. It is not a luxurious dining-hall, but a shed near the stables, with improvised table and benches; however, the plain fare and hot coffee are swallowed with a gusto which many a sated epicure might envy.

At the right (4) are two running horses shown at the supreme moment—just as they approach the wire. Every nerve and muscle is strained to secure the victory which in a fraction of a second will be decided for one or the other. In the central medallion (3) is represented a horse's head thrust through the window of the box. This is a very characteristic touch of nature. If the window is left open toward a course a seasoned racer will watch a race with as keen, and apparently as intelligent, an interest as the man who has bet his pile on the result.

In the lower left corner (5) is a stable scene—feeding the horses. At the right (6) is the mount for the race. The jockey has just settled in the saddle; on one side is the owner, giving his last words of advice and encouragement; on the other are two stable-men admiring the spirited animal with something of complacency.

CANADA THISTLES RUSTING OUT.

The Canada thistle is synonymous with all that is evil. It steals its way into the richest soil by having the wind carry the minute seeds, or gains a still better entrance unobserved in the grass seed for the coming meadow. When once established it is with great difficulty that its deep, wide-reaching roots can be extracted or otherwise killed. The spinose forage of the pest is not relished by live-stock and is a severe test upon the patience and morals of the person who must needs work among its dry piercing prickers in the harvest field.

It is, therefore, with much delight that an enemy is announced upon the dreaded thistle that may work the downfall of the vegetable arch-fiend in the grass and grain field. While rusts, smuts, blights, mildews and molds have come to bring ruin to the grain crops, spoil the potato field and destroy the fruits of the vine-yard and orchard the triumphant thistle has reared its unmolested head and spread its prickly foliage to add insult to injury over wide areas of our best farm-land. However, it has not proved itself proof against the whole host of fungi that prey upon higher forms of vegetation. Last year we were pleased to observe that a rust had fallen upon the thistle and did severe damage to a few plants in the vicinity of New Brunswick, N. J. Other observers have occasionally met with the rust upon the Canada thistle in former years and in the old country it has been known for a long time.

One of the most interesting points in connection with this enemy to the thistle and friend of man is the fact that it spreads with considerable rapidity. Last year in some patches of thistles not more than one out of fifty plants was affected, but this season fully half of the shoots in the same patches are badly diseased. The rust lives over the winter in the plant and shows its presence in the thistle shoot so soon as the latter has come above the ground. At the time of writing the rust can be detected several rods from the infested patch. As the shoots arise the diseased ones are more rapid in their growth; that is, the stems grow faster but fail to put forth as large leaves as those stems not affected by the fungus. The longer, straighter stems with smaller leaves with all parts of a pale color make it easy to distinguish the sick from the healthy plants. As the season advances the leaves become of a rusty brown color upon the under side, and rapidly shrivel and die while the almost leafless, withered stems remain behind with reclining heads, the picture of distress — to those who have sympathy with the vile thistle! The brown or rusty coating to the under side of the leaves is due to a vast multitude of spores. These spores while very small are designed for the spread of the disease, and when they fall upon healthy plants induce disease, and in time the unfortunate plant becomes rusted. That the rust spreads with ease there is no doubt; that it hibernates in the underground parts of the host in winter seems beyond question.

If, as seems evident, we have a stanch friend in this rust of the thistle it becomes us to study its habits and favor it in our thistle fields, provided it will not grow upon our crops and spoil them also. There does not seem to be any reason to fear that it will harm other plants than the thistles, and means for its propagation upon the thistle are in order. It seems to us that the best way will be to transplant diseased roots into fields that are still free from the pest. If, for example, there is a single square rod of rusted thistles in a large field these plants could be employed to infect the whole area. The spores go with the wind, but it will doubtless facilitate matters to set out the rusted plant. Something may be done in this direction at the experiment stations. Let us extend the warm hand of welcome to this rust enemy of the cursed Canada thistle.

PIONEER PIG-RAISING.

WALDO F. BROWN.

The present generation of farmers complain of hard times and low prices for farm products, yet many of us can look back to times when present prices would have been thought large, and the labor of getting our products to a cash market was so great that the selling of them was often more difficult than the growing. My boyhood home was in Union Co., Indiana. Our nearest market was Cincinnati, fifty miles distant; there was not a railroad west of the Alleghany mountains. Prices of farm products were very low—exceptionally so from the autumn of 1846 until about 1850, at which time turnpikes had been built out from the cities, and new markets opened. A neighbor wagoned wheat to Cincinnati when the roads were in such a condition that it required ten days with a four-horse team to make the round trip with a load of thirty-five bushels, and then sold it at three "levies," (thirty-seven and a half cents) a bushel, the entire receipts amounting to less than $1.50 per day for the time, and the driver was obliged to carry his provisions and horse feed, and camp out or he would have come back without any cash. I knew men who, after the long journey with corn or oats, found the market so glutted that they could not sell at all, and others who thought themselves fortunate to get ten cents a bushel. In the fall of 1846 dressed hogs sold at $1.75 per hundred pounds, yearling calves for one to two dollars a head; and in 1850 after we had moved to Ohio my father bought a herd of cows to start a cheese dairy, paying from seven to ten dollars per head for them, but for one extra fine cow he paid eleven dollars. At this time the hog was the only farm product on which the farmer could rely for cash, and even with the price at from two fifty to three dollars per hundred net, which was about the average price, the farmers could make money raising pork. The hogs obtained half their living in the woods, and in years when the mast (beech nuts and acorns) was plenty the hogs would fatten on them. Even when fed corn there

was a good profit, for corn was cheap, and a hog, after condensing thirty bushels or more of it into its carcass, could transport itself to a distant market at very small expense. My memories of the hogs of that day have been revived recently by a trip to eastern central Tennessee, where the elm-peeler, razor-back, hog can be found to-day in all its original purity of breeding. In the fall of 1846 my father fattened four hundred hogs and I recall that the three hundred on the home farm in Union county ate an acre of heavy corn a day for some weeks. These hogs were sold in November to be delivered on the hooks in Cincinnati, and I had my first experience as a drover in helping take them down. The weather was pleasant, the roads were good, the hogs not over fat, and we averaged ten miles a day, reaching the city the evening of the fifth day. A neighbor joined us with a hundred hogs, and for three days we were in sight of another neighbor with six hundred, so that one thousand hogs were in view. Father owned at the time a farm in Madison county, Indiana, about one hundred and twenty-five miles from Cincinnati, and had fed one hundred hogs on it, and early in December we started them on the long journey. The morning was bright and clear, with mercury about zero, and as there was snow on the ground it was favorable for the hogs' feet. Our first discovery was that the Madison county hog was a better runner and fighter than his Union county brother. Only a farm here and there was fenced, and we no sooner reached the woods than half a dozen of our older hogs broke for the swamp. When we reached White river trouble began. It was so cold not a hog would take to the water. There was open water some three feet deep along each shore and shallow water covered with ice in the middle. After finding it impossible to make the hogs take to the water, we huddled them on the bank and carried rails from an adjoining field and built a pen around them, and caught the hogs one at a time and pushed them into the water where father and the foreman took them by the ears and towed them to the ice, boosted them on to it, slid them across and off into the water when they swam ashore on the opposite side. This took till long after dark, and when we finally got the last hog over we could not find a quarter of them. We went to the nearest house for a hot supper and change of clothes. An hour or two later, when the full moon came up, we found the hogs had turned up the leaves under the snow, made a bed and laid down. The next morning they were all right and ready for their feed. For two days we had good weather and then came a sudden thaw and rain, and when still more than fifty miles from Cincinnati the frost was all out of the ground and the roads bottomless. It is simply impossible to describe the condition of the roads. From fence to fence it was a mortar bed which slowly flowed back and filled the trail the hog made as he dragged through it. The hogs, foot-sore and wearied, would only move as they were urged, and for every mile of progress toward our destination the drover must walk two or three in zigzagging across the road. When a hog gave out he settled down into the ooze, and to load him on a wagon we must burrow under and lift by main strength, and our clothes were soon plastered with mud and our teams loaded with disabled hogs, and extra teams hired of the farmers; but there had been such a demand for them, and the condition of the roads made so few hogs a load, that we were obliged to leave disabled hogs at the farms and send our wagons on to the city to unload and return for others. At last, after more than half a month on the road the hogs were safe in their pens, but our troubles were not at an end. For the hands there was the weary journey back through the mud, and for the owners of the hogs a weary waiting for cold weather so that slaughtering could begin. For fourteen long days my father waited, his hogs eating corn, which by a combination among the feed men cost one dollar a bushel, and huddled in the pens without shelter, the hogs lost in weight every day. During all these days the price of hogs steadily declined until when the market reopened one and three-fourths cents a pound was the best bid, and every drover in the market knew that he had lost not only all his hard labor, but heavily in money besides, and many were ruined financially. Father's losses were heavy, but determined to make them up, and knowing that he could buy stock hogs at very low prices, he contracted to deliver five hundred the first day of March, and after spending a night with his family was again on the road. It was but a repetition of the former experience except that the light store hogs could travel better and required no wagons to accompany them. The rains raised the streams so they could not be crossed, and the time specified in the contract expired while the herd was still miles away, and the hogs were disposed of at a loss. When I hear the young farmers of to-day complain of the hardships and drudgery of farm life, I recall my boyhood days and smile, realizing that they do not know the meaning of the words.

DEVELOPING THE HEIFERS.

WEBB DONNELL, MAINE.

It was once a very prevalent idea (and is still in some quarters, unfortunately,) that any kind of rough fodder is good enough for young stock, whether steers or heifers. Swale hay and dry cornstalks have made many a poor milker that with proper feeding might have been a credit to the herd. Stunted growth and poor development can be seen in all kinds of stock, because of insufficient food; but in no case do these have so depressing an effect, perhaps, as with the females that are to supply the dairy. The calf that, with proper feeding during the period of growth and after coming to the milking period, might have become a three-hundred-pound butter cow, will hardly exceed one hundred or one hundred and twenty-five pounds of butter per year under the neglectful, haphazard plan of feeding, which is also quite likely to precede an insufficient milk ration when the calf has become a cow. To obtain a cow of the highest capacity for production, it is not too soon to begin nearly a year before she is born. That is, have due regard to the butter qualities of the sire and dam from which she is to be raised. It is as foolish to expect butter cows from poor stock as to look for figs from thistles. It is not so important that the dam should have the highest milking qualities, though this will undoubtedly give the most satisfactory results, as a rule; but it is essential that the sire be pure-bred of a butter family and from a high productiveness. A scrub bull may have no dairy qualities in his blood. It is simply a lottery, with the chances against one, to patronize such a sire.

From the day of the calf's birth it should have the full measure of such food, as much as it needs for growth, and as much as it can digest—but in no case more. It should be kept growing without interruption. The sooner it is developed the less will be the expense, both of care and feed; for it is certainly more expensive to spend three years in attaining a size that could have been reached in two. There is better development also in the latter case.

When practicable, it has been found well to feed skim-milk from calfhood till the heifer comes into milk herself. It is fed warm during the first month. Ground oats and fine bran will also be valuable assistants in growing bone and tissue. These are especially important in the winter as an addition to the hay ration, which should be clover hay if obtainable. If silage can be added, or an occasional feed of finely-pulped roots, so much the better. Such foods, with warm quarters, a dry bed, and plenty of good water, in winter, bring a heifer to her full capacity as a producer of butter. When she begins to give milk, it should be kept in mind that, for largest yield, she must have as much of a well-balanced ration as she can digest. The measure of profitably feeding a well-bred butter cow ceases only when the well-balanced ration is fed in excess of her ability to turn it into dairy products.

IRRIGATION FOR EASTERN LANDS.

JOHN THOMPSON, NEW YORK.

The AMERICAN AGRICULTURIST is deserving of all praise for the stimulus it has given to the farmers of the country by its liberal prize offerings on the four principal crops. The reports of these have been very interesting, and cannot fail to incite farmers in every section to greater efforts; not for the prizes only, but for the profit and pleasure that better culture will give them. In connection, I wish to add a few words regarding the much-abused "worn-out" lands of the East, and attempt to show that by better cultivation, combined with irrigation, they may be made to vie with the much richer lands of the West. In the arid regions, the people are thoroughly aroused on the subject of irrigation, and are demonstrating its advantages. Large companies are building great reservoirs and canals, bringing the water many miles to the farmers, to be distributed under yearly contracts. While this is done in the West, Eastern farmers are slow to use means that can easily and cheaply be placed under their own permanent control. The florists, market or truck-farmers, whose windmills are becoming more numerous around the large cities, attest that the owners know the value of water. In the New England States, New York, and New Jersey, there are very few farms of over fifty acres where sufficient water could not be found and made available to the irrigation of at least ten acres; a small stream (so often found in the East), running along a ridge twelve or fifteen feet higher than the field to be

irrigated, which will flow 600 to 700 gallons an hour, will, in twenty-four hours, furnish water enough to cover one acre half an inch—a very good wetting, if distributed evenly over the surface. This amount always in reserve to supplement the average rainfall of the season will insure a bountiful crop. Where such a stream is not available, and one of like flow is running through the field, the water has only to be elevated to a reservoir or tanks of sufficient size to hold the quantity desired. Four of ten feet in diameter and six feet in depth will be equal to one-half inch of water to one acre. The height to elevate from the stream to the top of the tanks will not exceed twenty-five feet. There are several kinds of windmills which claim to elevate five hundred or more gallons per hour to a greater height. There are other methods of raising water. The hydraulic ram, where practicable, is a very effective and economical working power. Where streams are not available, large wells may be sunk, remembering it is diameter in wells, as in tanks, that makes capacity to the foot of depth—one of ten feet diameter having four times the capacity per foot of depth to one of five feet. When the land is tile-drained, the depth of the well will be such that many of the drains may be made to discharge into it, thus adding to the inflow. The liberal use of water will revolutionize the farming in the Eastern States. First, the water is easy of access, costs nothing, and, when the appliances are once set up they belong to the farmer, as do his farm improvements. The corn crop of the six Eastern States, New York, and New Jersey, by report of 1880 and AMERICAN AGRICULTURIST of February, 1889, was less than thirty-three bushels per acre. This average has by high culture in advantageous seasons been greatly exceeded, both East and West, some claiming for Kansas that this year large tracts have yielded over one hundred bushels per acre. This has often been done in the East; but the average is what tells to the welfare of the whole country. When, by the judicious use of water and a better general culture, this average shall be increased to fifty, sixty, or seventy-five bushels to the acre, as can be done, the aggregate will tell enormously. The marvelous results of irrigation applied to grass in the West can be equaled in the East, where fine quality is very much more valuable. An acre of mixed grass under the ordinary cultivation of the East yields about one ton of hay on an average. When not pinched by drought, it yields two tons of hay. To make this yield, over four hundred tons of water are required to supply the needed moisture. Without disparaging the enterprise of the West, let the Eastern farmers take new courage, and, under the stimulating guidance of the AMERICAN AGRICULTURIST, enter on a better cultivation of their farms, remembering that the water of their Eastern brooks is as valuable as that of the Western canals, and will reward a like enterprise.

POULTRY-KEEPING IN THE SOUTH.

NANNIE CABELL, VIRGINIA.

Articles on the advantages of poultry-keeping are very common but we rarely see any that speak of the value of the fertilizer secured by keeping them, which is by no means one of the least benefits we get from our hen-houses. It is regarded as superior to guano for gardens, and it certainly is far cheaper. Hen-house manure has no seeds in it and that is a great advantage over all other kinds of home-made manures. When the hen-house does not leak and the floor is on the ground it can be obtained in nice order for putting on plants and flowers by scraping it up every day or so.

The poultry-house need not be cleaned out oftener than once in six weeks provided that dry clay, swamp muck, or dry land plaster is plentifully sprinkled on the droppings every two or three days, to absorb the injurious gases. I never feed my chickens on the damp ground, but in clean feed-troughs, so arranged as to be perfectly accessible to their bills, but impossible for them to get into with their feet. They have daily, finely powdered charcoal and a constant supply of pure water. I have never had healthier chickens than for the past year, though formerly every May and June I lost a large proportion of my grown and young chickens with cholera. I find that charcoal is a great help to keeping them in a healthy condition, but I do not think it cures cholera. I have made much more from poultry than writers ordinarily estimate, generally clearing forty or fifty dollars during the year, besides having chickens for the table and using the eggs needed about housekeeping in a moderate-sized family. I buy all my feed too, and have very little range for them, no grass or clover lots to run on, and any one knows what a help grass and clover are toward feeding them. I feed almost entirely with wheat screenings and find them the best of food. My fowls keep in fine condition and lay steadily. That, too, in my section is the cheapest food, as I get it from a mill near by at twenty cents per bushel. I do not keep more than sixty or seventy hens and find these plenty to give me employment, some profit, and a great help to the table, and there is also great pleasure, particularly when the downy, pretty little chicks are first hatched out. Then it is so interesting to see their growth. Every one knows what a worry it is in feeding young chickens to have the grown fowls rushing in and snatching the food from them and knocking them over. To prevent all this have a small yard with the palings only far enough apart to permit half-grown chickens to slip through; have a gate to your yard, so you can always feed young chicks in this yard; keep water in pans or troughs always. This yard protects them from dogs, hogs, or any other animal that may chance about, and having once tried this plan I am sure you will never be without one. For the small chickens, have a feeding coop in this yard with the slats so close together that only the little chicks can get in, otherwise the larger chickens will soon crowd out the poor little creatures and they will not get enough to eat. My experience is, that it is most important to give them a good start by having feed where they can get it whenever they want it, for the first two weeks, at least; after that, feed them at regular times, making the times fewer as they grew older and can forage better for themselves. I always keep my hens confined to the coop for at least three weeks after the chicks are hatched, leaving it so that they can run in and out at their own sweet will. By this time they are strong enough not to be hurt by the mother hen's wanderings.

POULTRY PICKINGS.

JNO. W. CAUGHEY, PENNSYLVANIA.

Grapevines planted in the chicken runs and trained to the fence afford shade to poultry; and also fruit to the farmer in autumn. The vines should be trained high up.

In warm weather whitewash and carbolic acid should be applied freely to the interior of all hen-houses as well as nests and roosts. We usually whiten up everything about the poultry quarters every three weeks the year around. A white building is more attractive than a dingy one. The fowls like it, and this alone is a good reason for keeping it so.

Eggs should be gathered daily and stored in a dry place, not a cellar. Fifty degrees is a safe temperature. Eggs intended for hatching should be gently turned once a day. Egg cases holding two or more dozen are convenient for this purpose. It repays the farmer to properly care for the eggs and not permit them to remain longer than a day in the nest.

Never use ashes or lime to mix with hen manure. If either is used, away goes the ammonia, which is the most valuable part of the manure. Every morning with a shovel and scraper the floor of the hen house should be thoroughly scraped and the accumulation placed in barrels in a dry shed close at hand. When enough has been stored it may be used in a semi-liquid form about the strawberry vines, currant and raspberry bushes and other fruit and vegetable plants. It will pay to look after the manure and not throw it out, unmindful of its value.

There are people who make poultry pay largely and others who do not. Experience has taught that there is no legitimate business which pays better, but it must be conducted with care and skill. The lack of these is why nine-tenths of our farmers do not make it a success. A farmer who keeps a strict ledger account of all the returns and expenditures from his poultry is an exception. Many keep no account at all. Such are the ones who cry "poultry don't pay." Lack of experience, patience, system and understanding of the amount of work connected with poultry raising tell the reason of their failure. Is it not true?

The Cochin is short-legged, flat-bodied and heavily-feathered. The Langshan, so often mistaken by inexperienced persons for Cochins, is long, feather-legged, possessing an erect carriage. In other points the greatest difference is noticeable. The Cochin is sluggish in action and spirit, the Langshan active and nervous. The Cochin has coarse yellow flesh, the Langshan pure creamy white and abundance of it. Taking a comparison of the two breeds we would consider the Cochin more of a fancy or ornamental variety, the Langshan is in every way useful. I admire the Cochin fowl, yet my preference for utility is with the Langshan. For those who have never kept Langshans and wish to add a useful breed I can recommend them.

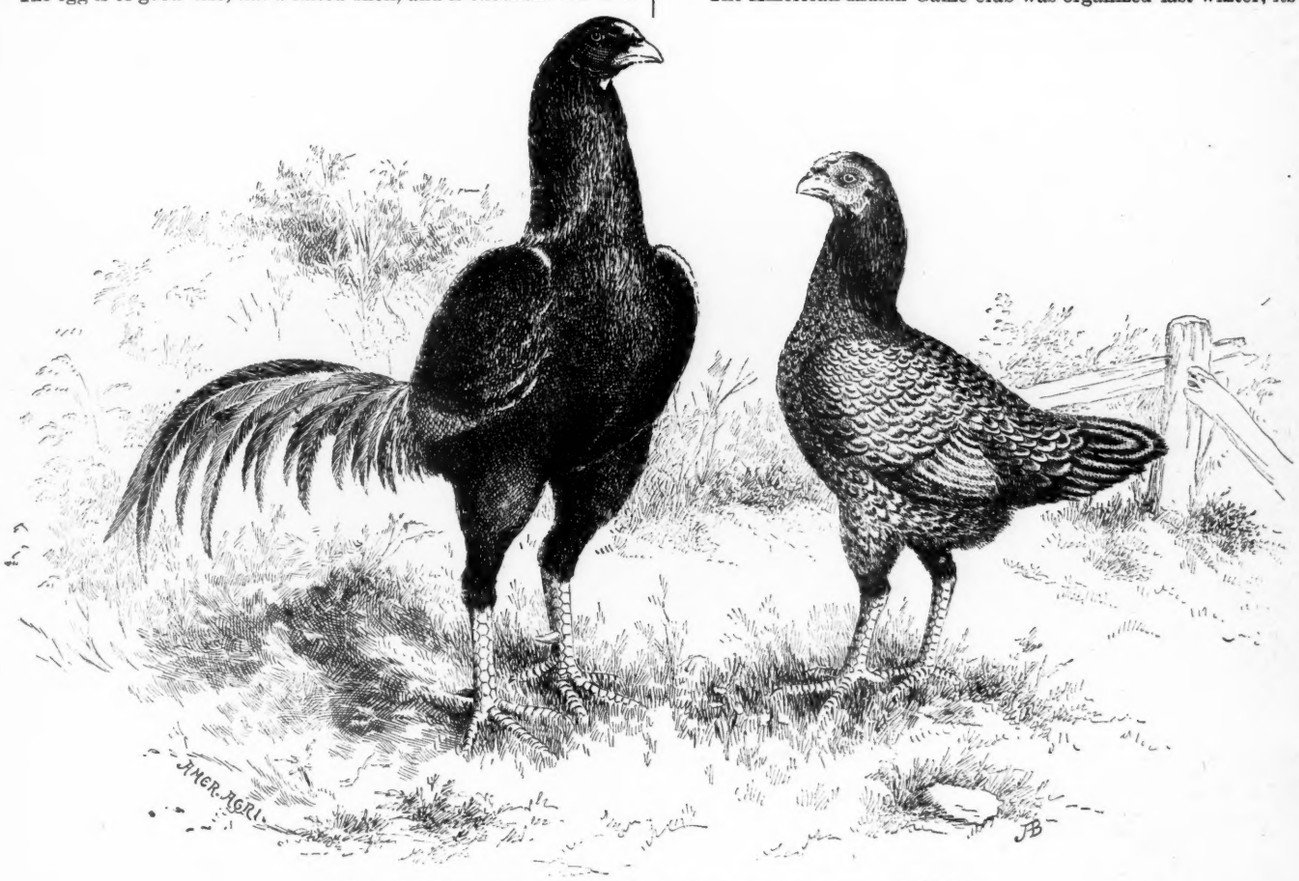
INDIAN GAME FOWLS.

H. S. BABCOCK.

The Indian Game, of which a pair is illustrated herewith, is the largest of the game family. The adult cocks weigh from eight to ten pounds, and in exceptional cases even more, and the hens from five and a half to seven and a half pounds; exceptionally heavy hens, in full flesh, sometimes reaching nearly nine pounds. If the weights of adults be placed at nine pounds for cocks, and seven for hens it will not be far from the average of well-bred specimens.

As table fowls the Indian Games are "chief among equals." They have exceptionally broad breasts and are throughout heavily meated. Their flesh, too, is of the finest quality. Bred pure or crossed upon other varieties they make the finest dressed poultry. In England, the Indian Game-Dorking cross is a favorite, and the Indian Game-Plymouth Rock is also greatly prized.

As layers they are fairly prolific; they will lay nearly as many eggs as the Plymouth Rock, and lay reasonably well in cold weather. The egg is of good size, has a tinted shell, and is excellent for use.



A PAIR OF HIGH-BRED INDIAN GAME FOWLS.

The hens sit well, though extra heavy specimens are liable to break thin-shelled eggs. They make excellent mothers. It is not difficult to break up broody hens, if it is desired so to do.

Except in comb, they bear very little resemblance to the Black Sumatras. Both breeds have an irregular pea comb, but the comb of the Indian Game is smaller and more regular than that of the Black Sumatra. This latter breed is characterized by long soft plumage, full heavy flowing tails in the males, black shanks, and the male birds often have two or three spurs on each shank. The Indian Game has very short, close, hard plumage, yellow legs, small, closely folded tails, and the males have but one spur upon each shank. The Black Sumatra is a small, the Indian a large fowl. The former has a solid black plumage, while the Indian Game has a beautifully variegated plumage. The male Indian is black on breast and under parts; has a black hackle, with a brown crimson shaft to each feather; a back of crimson and black; a saddle of crimson and black; a wing-bay—the triangular space back of the black wing-bar—of chestnut; and a tail of black with green luster. The female has a body color of golden bay or chesnut brown, each feather laced with one or more lacings of brilliant black, the neck being black, with the shaft of the feather colored like the body. The Black Sumatra is a purely fancy fowl—decidedly handsome, but rather delicate to rear. The Indian Game is a decidedly practical fowl, with beauty enough to place it high in the ranks of the fancy breeds, and is extremely hardy and easy to rear. In carriage the Black Sumatra is moderately erect, the Indian Game very erect; the one stands on rather short legs, the other upon rather long legs, but not so long and stilty as the Malay or the modern Exhibition Game. Both breeds have lustrous plumage, but that of the Indian Game exceeds in luster the plumage of the Black Sumatra, and, indeed, of almost any other breed.

To sum up the whole matter, the Indian Game is a large, heavy, fowl, superior as a table breed, fairly good as a layer, thoroughly hardy, and clothed in an exquisitely beautiful plumage. It adds substance to elegance in its figure, and intricacy of marking to richness of color in its plumage, and combines in a remarkable degree the beautiful qualities of a fancy with the useful qualities of a thoroughly practical fowl.

The American-Indian Game club was organized last winter, its membership embracing the leading breeders of these fowls. The object of the club is the advancement of the Indian Game breed, the preparation of a standard whereby the fowls may be systematically judged, and the securing for them of separate classes in American poultry exhibitions. The following are the officers for the present year: President, H. S. Babcock; Secretary and Treasurer, O. K. Sharp; Executive Committee, F. W. Gaylor, C. A. Bowman, Irving Crocker; Committee to Prepare Standard, O. K. Sharp, H. S. Babcock, J. Y. Bicknell, F. W. Gaylor, J. H. Drevenstedt.

HOW TO BEGIN POULTRY KEEPING.

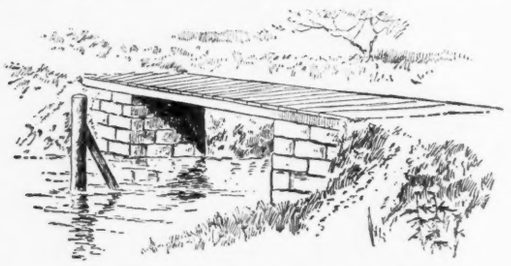
W. M. BARNUM, NEW YORK.

The safe rule to follow in starting in the poultry business, as in any other pursuit, is to know what you want. Never mind what any interested person has to say about some particular variety of fowls. Make your own investigation—go to his yards, look over his different varieties; read up on the subject—and know what you are doing. And then you can go ahead and make your selection with a reasonable prospect of success. Get the breed best suited to

your purposes. One who lives in a town, with but limited quarters, should choose some of the Asiatics. If there is plenty of range, and eggs are the object—take some of the active, large-combed breeds, such as Leghorns, Minorcas, or Hamburgs. If the object is to raise poultry for market—take some of the middle-sized, quick-growing breeds—Plymouth Rocks, or Wyandottes. While for a good, all-around fowl the American Langshan is the best, though there are many other good breeds that would go in this class. One thing, that must be remembered, is that every one must suit his own individual taste and purposes. After having decided upon the breed or breeds to keep, the next question that comes up is where to procure the stock? Get it of some reliable, well-known fancier who has a reputation at stake. You have then the guarantee of good stock, and, even if it does cost a little more, you have the foundation of success. It is particularly true in the poultry business that the lowest priced is the dearest, in the end.

PROTECTING SMALL BRIDGES AND CULVERTS.

The greatest danger to bridges and culverts occurs at flood or high water time, when driftwood chokes the waterway under the bridge, causing overflow and often great damage and destruction.

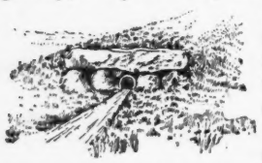


METHOD OF PROTECTING CULVERTS.

The danger may be greatly obviated by following the plan herewith illustrated. It consists simply in setting a stout post from two to four feet from the entrance to the bridge, on the up-stream side. All driftwood and flotsam, instead of floating down against the walls of the bridge, lodge against the post in midstream. Even should the space between the post and abutments on both sides be filled with rubbish the mouth of the bridge will remain unobstructed, and the water will flow through, under, and over the obstruction with perfect freedom.

OUTLET FOR TILE DRAINS.

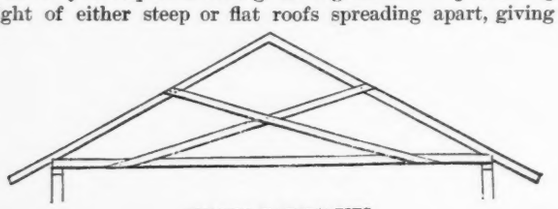
Farmers spend time and money on tile or stone underdrains, and then leave the outlet of the main wholly unprotected. Consequently, in a year or so, the cattle or other stock and the action of the frost displace the drain, and partly or wholly fill up the channel. If the fall is but slight, the whole work sometimes proves worthless. For a proper outlet lay a large flat stone, two or more feet square, above the tile, as shown in the engraving. Place a number of small stones each side to aid in supporting the stone in a proper position. If stone can not be had, use a wide piece of plank about three feet long. It will last much longer if the surface is first charred. If stones can not be obtained for the side supports, use blocks of wood or even whole or broken sections of tile. After heavy rains, or at least several times a year, examine the outlet and remove all accumulations of mud or gravel.



SECURE OUTLET FOR DRAINS.

A GOOD SUPPORT FOR ROOFS.

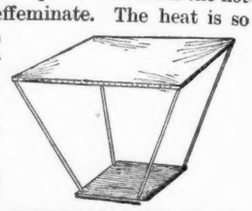
A very cheap and strong arrangement for preventing the weight of either steep or flat roofs spreading apart, giving the building that most undesirable appearance of a "broken back," is shown in the accompanying engraving. After the rafters are in position, take stiff board stuff, one by four inches, and nail one end to the rafter about one third of the distance from the top, nailing the other end to the beam, or, in absence of a beam, to the studding or joists. Where these rafter-ties cross each other they are also securely nailed. These ties, placed upon every second or third pair of rafters, make the most solid kind of a roof, that will never sag even when covered with slate, heavy snow, or tried by the wind. This plan is far preferable to the common one of simply nailing a strip from one rafter to the other; this plan, as shown, adds strength to the entire structure, costs but little, and would be more used if known.



STRONG RAFTER-TIES.

FARM IMPLEMENT CANOPY.

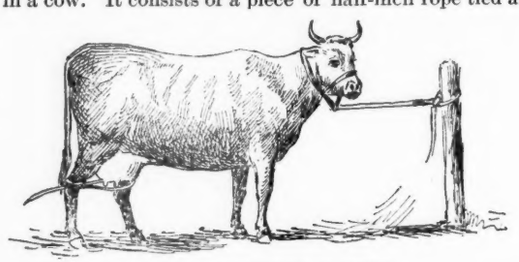
There is no reason why the man on the sulky plow, riding cultivator, mower, or reaper, should not have protection from the hot sunshine. To erect a canopy is not effeminate. The heat is so great as to be enervating, and the more we escape it the greater our capacity for work. It is found that an umbrella, fastened beside the seat is convenient, but too short lived—the support in the center is not enough in gusty weather. A canopy easily made and durable is shown in the illustration. A block of oak, two inches thick and twelve inches square, is selected. Near each corner is bored a hole inclined outward at an angle of forty-five degrees. In these holes are inserted four stout pieces—young saplings are excellent—and to their ends are fastened light sticks forming a square, over which the cloth is stretched and tacked. The arrangement of the seat on the various makes of mowers, sulky plows, etc., is so different that no directions for fastening the oak block can be given. In most cases the iron seat is held in place by an iron bolt passing through the center. Then a hole is bored through the center of the block and it is placed directly under the seat. A larger block may be used, making the uprights farther apart, as the driver must sit between them.



SERVICEABLE IMPLEMENT CANOPY.

RESTRAINT FOR A KICKING COW.

Mr. D. D. Moore, Dutchess Co., N. Y., sends us a sketch and description of the device depicted herewith for breaking the kicking habit in a cow. It consists of a piece of half-inch rope tied around the near leg above the hock, carried behind the off leg, thence around and between both legs, leaving an end long enough to hold or tie to the milking stool while milking proceeds. The cow is first stanchioned or tied by the head.



DEVICE TO PREVENT KICKING.

A FLEXIBLE ANIMAL POKE.

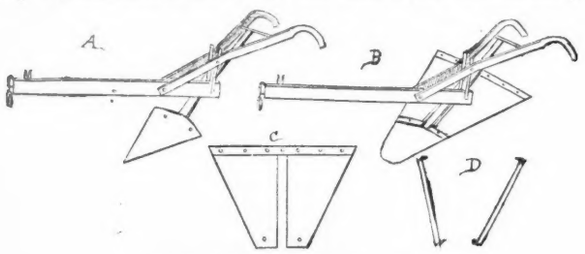
The poke shown in the accompanying engraving is readily made by any farmer handy with tools. It consists of a wooden bow, between the lower ends of which is loosely bolted a square stick of hard wood eighteen inches in length and two by three inches square. Near the lower end of this is inserted a wooden pin half an inch in diameter, left projecting about six inches. The flexibility of this poke allows the animal to feed with greater comfort and freedom and less strain upon the neck than when the common contrivance is used. The inner angles of the bow should be carefully rounded and smoothed, to keep them from chafing the neck.

EASILY-MADE POKE.

CULTIVATION OF SWEET POTATOES.

NATHAN P. HINES, INDIANA.

Herewith are illustrations of the implement used in throwing up the ridges in which sweet potato plants are set in Indiana. It is made as follows: First, take a solid single shovel plow (A), being careful that the upright slopes back far enough to give slant to the wings so that they may throw off the soil like a mold-board plow. The shovel must be at least twelve inches across the top. Each wing (B) must be not less than eighteen inches wide at the top, twenty-four inches in height, and wide enough at the foot to extend out a little beyond the edge of the shovel. The wings are made of poplar an inch thick, using boards of the right width so as to have each wing in a solid piece. They are firmly fastened to the plow by an iron strap an inch and a half wide, passing in front of the upright and across the face of the wings. An iron brace is fastened across the back side of the upright. At the foot they are bolted to the back side of the shovel as shown in the engraving. The iron straps at the top of the wings are bent back so as to make the earth turn off from the face of the wings, which are covered with tin. At C is shown the ridger complete. To use it successfully requires a doubletree seven feet long, so that in finishing up the ridges the horses will not walk on them. We usually plow the ground as early as practicable in the spring, and then replow and thoroughly



SWEET-POTATO CULTIVATORS.

prepare it as we want to make the ridges. Two men with a team can do more with this ridger than twelve men can the old way, as it finishes the ridge ready for the plants without using the hoe at all if it is properly handled.

The plants are set with a stick about three feet long, an inch and a half wide, and about half an inch thick at the lower end, which is slightly notched to hold the plant as it goes down into the ground. Lay the plants so that the butts will be about the center of the ridge, and with the stick catch only enough of the end of the plant to carry it down. By this method the plants can be set deeper, and one does not have to stoop. All cultivation is given with the ridger by having sharp straps of iron attached to the wings, which scrape off weeds as fast as they come through, only using the hoe around the plants.

HAULING FODDER.

In autumn, before the sled can be used, the appliances illustrated herewith will commend themselves. For hauling fodder on a wagon, the hay rack is best; but to use it would often require shifting from box to rack and back again each day when the farmer has only one wagon and daily hauls some green fodder to help out the pastures. In such a case it is better to use the wagon with the bed on, laying the fodder lengthwise in the bed until it is full, and then crosswise, as the hind wheels project above the bed on the ordinary wagon the arrangement shown in Fig. 1 is necessary. The standard is brought above the wheel by a stick passed through the rings. Over the top of the stick, and secured to it by a nail, is bent a hoop, the ends passing through cleats driven into the box. This holds the fodder off the wheels. Loading fodder on a wagon, whether on the box or hay rack, is very difficult, especially after the load is partly on, unless a ladder of some sort is provided. A very good one is shown in Fig. 2. It is simply a wide board, to which are nailed cleats at proper intervals, fastened to the rear of the wagon by two short pieces of ropes or chains. As the wagon is driven along it drags after and is at once ready for use. When the load is on it may be detached and left in the field, or it may be brought up over the load and held in place with a rope from the front; this arrangement holding the load on the wagon.

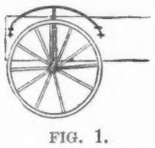


FIG. 1.

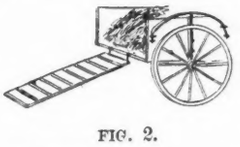


FIG. 2.

WAGON FOR HAULING FODDER.

A CONVENIENT COW-STABLE.

JOHN GOULD, OHIO.

A subscriber of the AMERICAN AGRICULTURIST asks me to describe my style of cow-stable, method of fastening, etc. First, the barn is built on rising ground, with ample drainage, requiring

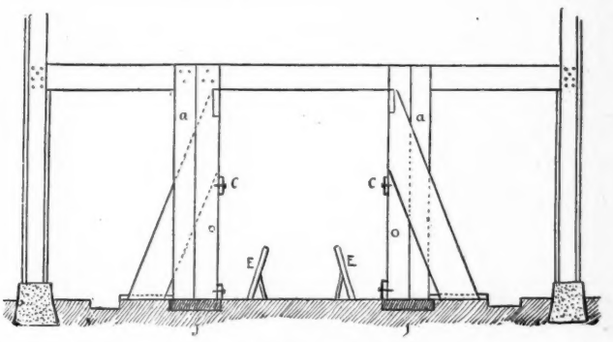


FIG. 1. SECTION OF STALLS.

no floor to keep one's feet dry, being built on a low concrete wall sixteen inches thick, and twelve inches high above the surface. It has a balloon frame, with self-supporting roof, and eighteen-feet posts; joists eight-and-three-fourths feet above the floor. The outside is covered with matched drop-siding; the inside ceiled up with flooring, backed with tarred paper. The floor overhead is of matched pine flooring; the roof of the best quality of shingles. The stables are each ten feet four inches wide; as is also the alley and manger-room. Back five feet from the manger a trench, eight inches deep and sixteen inches wide, was dug, and a trench-box, made of two-inch plank with eight-inch sides, was put into this trench, and bedded in cement mortar, making it absolutely water-tight. A plank fourteen inches in width was spiked to the inner edge of the trench-box, for the hind feet of the cows; the fore feet are on the earth. This shuts out all undercurrents of air, frost and odors.

The stalls are made double, to hold two cows each. The stable is spaced off into places six feet two inches wide, and two planks set upright, as seen in Fig. 1, and nailed to the joist overhead, and toe-nailed to blocks (J J) set in the ground, having first been charged with hot gas-tar. A brace-board fourteen to sixteen inches is set up and toed first to the heel-plank at the gutter, and clinched to the uprights, *a a*. A little more than three-and-a-half feet from the floor (according to the size of the cows) a neck-piece, *c c*, is fastened on with large wood screws, this keeping the cows out of the manger. Between each of these uprights a letter A is fastened, as seen in Fig. 2. This keeps the two cows standing side by side apart when eating from the manger, E E. When not eating, they often step back, as they can, the length of the slack of their chains — twelve inches — and can "peacefully lick" each other's faces, but not cross horns. Twenty inches above the floor (Fig. 2) a hole is bored through the inner upright, *a a*, and the end of these neck-halter chains slipped through, one hole answering for a chain from each side. The chain is what is known as a four-O, and has a swivel at the "split," so that it will not kink. This chain gives the cows much freedom of movement, allows them to comfortably lie with their heads upon their sides and often allay the irritation of an itching hide. If the end bar of the chain is put through two end rings, they never unfasten. The cows are quickly tied or untied. A nail is driven into the neck-piece at H, and when

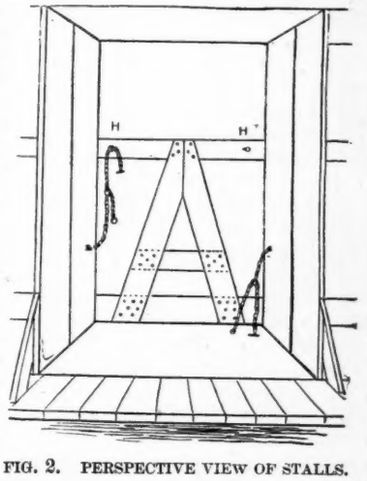


FIG. 2. PERSPECTIVE VIEW OF STALLS.

the cow is loosened, the chain is hung over this; and when the same cow is to be tied up, the chain is dropped over the neck and fastened without bother. The balance of Fig. 2 is self-explanatory. With this style of stable, the care of the cows seemed reduced to the minimum. The wide walk behind the cows allows ample room for the wheelbarrow. The temperature was never below 45°, and, the stable being amply ventilated, as well as lighted, the cows remained there at one time for over one hundred days, and without any discomfort that I could discern; and, during all this time, not a cow was once off her feed.

SUGAR-CANE CULTURE IN LOUISIANA.—I.

THOMAS MANN CAGE, LOUISIANA.

Lower Louisiana is purely an alluvial deposit, being composed of the disintegrated rock formations from the vast regions lying between the Alleghany and Rocky Mountains—a melange perhaps as perfect for the support of plant life as any to be found on the face of the globe. The lands best adapted to canes are on the immediate banks of the rivers and bayous, with a gentle declivity toward the swamps and lakes. The soils vary in quality and texture from sand to clay, according to the manner of deposit since the remote ages in the world's history. The plantations are to be found at intervals and adjoining on the Mississippi river, its tributaries, the La Fourche (a fork), one of its outlets to the gulf, and the numerous bayous—the most important of which is the Têche, rendered famous by the poet Longfellow.

The flat conformation of the country robs it of picturesqueness, yet, to the stranger, the weird semi-tropical aspect of the forests, clad with Spanish moss, has its charm. The dwellings on the estates are frequently surrounded by the stately live-oaks and magnolias, or shrubbery and flowers of many varieties, according to the taste of the occupants. The cabins and sugar-houses are at no great distance from the planter's abode, and should be centrally located to insure economies in labor. To the unpracticed eye, at some little distance, sugar-cane strongly resembles Indian corn or maize, yet their characteristics are remarkably dissimilar—the one maturing grain and seed, and the other having to be propagated from cuttings, or the entire stalk being covered with loose earth. In the habitat of the cane, the shoot or sucker springs from the eye of the mother cane under the surface of the ground, before or after it has flowered—a premonition of maturity and subsequent final decay. The young plant develops and forms from twenty to forty joints, varying in length from one to nine inches, according to variety, soil, and climatic influences. At each joint is a bud or eye, with a silicated sheathing, from which young shoots develop. The leaf encircles the stalk closely for a foot or more and then droops from it with a graceful curve, and attaining a length of about four feet. Each leaf retains its vitality until maturity of the joint to which it is attached. The joint formation under the ground is frequent, and there may be a dozen in the space of half a foot from the surface of the ground to the main root. From each of the eyes or buds in the soil, a perfect cane may be produced—they forming the second crop, or ratoons, after the mother-cane is harvested. The varieties are many, some peculiarly adapted to moist, dark soils, and others again thrive best in lighter soils of some elevation. The extremes range from the thirsty volcanic soils of the Sandwich Islands, where expensive irrigation is necessary, to the humid soils of Demerara, which are four feet below the level of high tides, and where the annual rainfall amounts to about one hundred inches when the season proves a very wet one. On the same plantation, not only in Louisiana, but other cane-growing regions, there are localities wonderfully well adapted to cane culture, and close at hand those where it is futile to attempt their profitable growth. Its capabilities of withstanding the vicissitudes of extreme drought and superabundance of rain is very marked, and show great superiority to corn in that respect. The plant revels in heat and humidity, but is checked in its growth by cool weather, too frequent rains—particularly in the early stages of growth—and prolonged dry seasons, ranging from two to six or eight months' duration.

The age at which canes arrive at maturity depends on the variety and locality, but they are generally harvested when from ten to eighteen months old. The cool nights of autumn are an advantage, and frosts develop sugar and hasten maturity; a freeze of some severity alone being injurious, not only for the canes ready for crushing, but the young shoots. The methods of planting, fertilizing, and cultivation vary in different countries,—influenced by soils, climate, and numerous other causes.

The injurious effects of too frequent cropping in cane are similar to following wheat after wheat in the Western States and elsewhere. Virgin soils are noted for yielding a heavy tonnage of canes, often poor in sugar, due to rank growth. Time soon corrects the evil, and recourse must be had to a rotation of crops, and the application of manures. The immense leaf and stalk development, on an acre of cane yielding twenty-five tons for the mill, causes rapid exhaustion, particularly of the nitrogenous constituents of the soil.

The methods of recuperation differ widely in the different countries, as a rotation of crops is adopted in one district, entire rest in another, and again, in many instances, after a term of years cultivation is abandoned. In countries where frosts are unknown canes will ratoon for years, and as many as twenty-five crops have been produced prior to replanting. Experience has demonstrated that the tonnage decreases rapidly after the second year, and the cane becomes woody and poor in saccharine properties.

The plantation of which I write contains 4,000 acres, a thousand of which are cleared, the balance being composed of woodland and cypress swamp, and is intersected by the beautiful Bayou Têche, which is spanned by a draw-bridge to permit the passage of steamers and other craft. Near the dwelling is the abode of the manager, cabins for the laborers employed on the estate, stables for one hundred mules, carpenter and blacksmith shops, corn-cribs, hay and implement sheds, etc. Adjacent thereto is the large sugar-house, containing elaborate machinery and apparatus wherewith many thousand pounds of sugar are daily manufactured during the grinding season, from October until January.

RAISING POTATO SEED.

Potato flowers are often very abundant, but not so much can be said of the fruit. Some varieties are much more apt to produce the fruit, usually called "balls," than others. Two years ago we made some extended observations upon the fruiting tendency of several kinds of potatoes, and it was found that in those varieties producing little or no seed that there was a lack of pollen in the stamens. For the production of seed, at least two parts of a flower are required to be in a healthy condition. First, there needs to be a vigorous seed-vessel bearing good sound young seeds (ovules) and substantial stamens producing the pollen or flower dust, as it is sometimes called. In the majority of potato flowers there is a, so to speak, "fatty degeneration," to use a stock-breeding phrase, of the stamens, and the pollen is abortive, and consequently the pistils which seem healthy are unable to produce seed. This condition of things may be a result of the continued practice of propagating the potato from year to year by means of the tubers, and not relying upon the seed as a means of continuing the species. New sorts originate by sowing the seeds, and therefore those who wish to produce crosses between the best varieties, to combine their good qualities, should bear in mind that good pollen is one of the essentials, and should be governed in their selections accordingly.

SHORT STOPS.

The best fed fruit tree is the last one attacked by insects.

It is cheaper to haul than to drive the fat hogs to the railway station.

Frost is blamed for killing many an orchard tree that is starved to death.

A trotting match between the cows and the dog may be interesting, but it does not make butter.

You are under no obligation to loan to the person that does not promptly return articles in good order.

We want to get rid of scrub land and scrub farming, as well as of scrub stock. Grade up all along the line!

A score of farmers fail because they try to do something other than farming, where one fails by sticking to farming.

If your horses shrink from you, when you enter their stalls, do some detective work on your hired help, or—yourself.

Get a stencil and put your name on your larger farming implements, sacks, etc. Get a die, and stamp your name on smaller implements.

It is a curious fact that some men would rather make five dollars by trading horses than twenty-five dollars by housing farming implements.

A cow that has to get her living by gnawing the parched pasture, under an August sun, without other feed, is not likely to make a great show at the pail.

THE ABERDEEN-ANGUS BREED.

The Aberdeen-Angus breed of black hornless cattle is unquestionably one of the old native breeds of Scotland, though it is only within the present century that decided efforts have been made to drive out the short, stubby horns, worn by a few animals of the breed, especially those from the upland districts. The law of reversion to type occasionally produces some animals fairly well pedigreed that have small stubs where the horns should be. Curiously enough, they cover nearly the same area in the northeastern lowlands of Scotland in which the Scotch Shorthorns have been brought to perfection. The black "doddies" have short, fine hair, fine bone, are kindly and profitable feeders, and have been bred on nearly the same lines as their neighbors and rivals; low legs, with a long, thick symmetrical body with all the best "cuts" well filled out, and, if possible, beat them as butchers' beasts in the best markets where as "prime Scots" they command a higher price than the best English-fed animals. Part of the success of these two Northern breeds is doubtless owing to the fact that the skill and enterprise of the breeders is ably supported by the zeal and intelligence of their hired men, who belong to perhaps the best educated peasantry in the world. The best herds in Canada and the Western States are to-day intrusted with confidence to the men who have served under the Cruickshanks and McCanbies, and there became past-masters in the art.

Every stockman in America has heard of "Willie Watson," who, in 1887, fed the animals that won sixty-one out of the sixty-three prizes at the fat-stock shows of Kansas City and Chicago, and was in judgment of stock while yet a mere lad equal to the best stockmen of Old England. A Willie five generations back in the same family was famed for his doddies; and the same stock, with judicious admixtures, became in the early years of this century the fountain head of the best blood of the breed. Hugh Watson, father of the "wandering Willie," so well known here, began eighty years ago on the farm of Keillor a still more careful handling of the breed. Gray-Breasted Jock, so-called from a gray spot on his neck vein, a long, low-legged and massive bull with great impressive power, was for ten years the champion of Scotland, and when twelve years old won at the Royal Irish show, in 1845, a champion cup worth $500, awarded by three English judges. His son, old Jock, "The Invincible," the first registered male of the breed, flourished for thirteen years, and was by William McCombie pronounced the best Angus bull he ever saw. There were more Jocks before and after these two, all famous in their time, and old Grannie and old Favorite, the first registered females, are equally conspicuous for their merit and reproductive powers. The Keillor herd, with those of Carnegie, Ferguson of Kinnocktry, and Adam Bowie, are the most notable herds of the Angus branch, so called after the county of Forfar or Angus, in which they flourish.

The man who has done more than any other to bring fame to the black polls was William McCombie, who, in 1830, succeeded his father on the farm of Tillyfour, in Aberdeenshire. To improve his own carefully-bred stock, he went over to Keillor and bought a grand bull, Angus 45. The honors won by McCombie in many a hard-fought field were many and great, but his crowning triumph and that of his favorite breed was won at the Paris world's fair in 1878 when, by the voice of twenty-four out of thirty-one judges, his herd was awarded the champion prize for the best beef-producing breed. When last heard from, over a year ago, three of them were still alive and breeding on the farm of William Wilken, of Waterside. Pride 7th was suckling a fine bull calf in her twentieth year, and Paris, the king of that notable herd, doing good service as a sire. Mr. Wilken's Waterside Matilda is the champion beast of the breed to-day, though at the Windsor Royal the honor was awarded to Cash, son of Mosstrooper, and the Waterside stock carried off the cream of the honors everywhere in 1889, as well as gaining the Birmingham championship in 1888. Sir George McPherson Grant, of Ballindalloch, owner of Erica and Jilb, "Mother of Monarchs" Justice and Esquire, and Lord Tweedmouth, at Guisachan, breeder of the champion Cash, and many other animals of first rank, are more aristocratic breeders, while a host of others contribute their full share to the prestige of this grand beef breed. Clement Stephenson, of Newcastle, Eng., has had wonderful success with this breed. In four years out of five his polls won the championship at Birmingham, the last of them Young Bellona, after bearing two calves being put up to feed and within three months after winning champion cups, gold medals and money prizes to the value of over two thousand dollars, and in thirteen months more bearing a bull calf. This was even beaten by Waterside Helena, which, after winning the beef championship of 1888, dropped within twelve months a fine

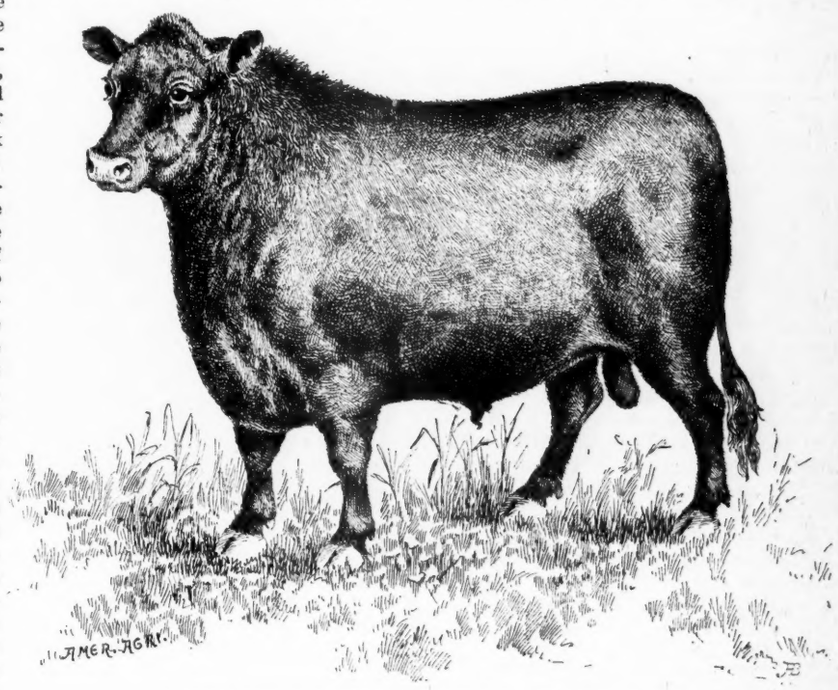


FIG. 1. THE ABERDEEN-ANGUS BULL ENERGY OF BALLINDALLOCH.

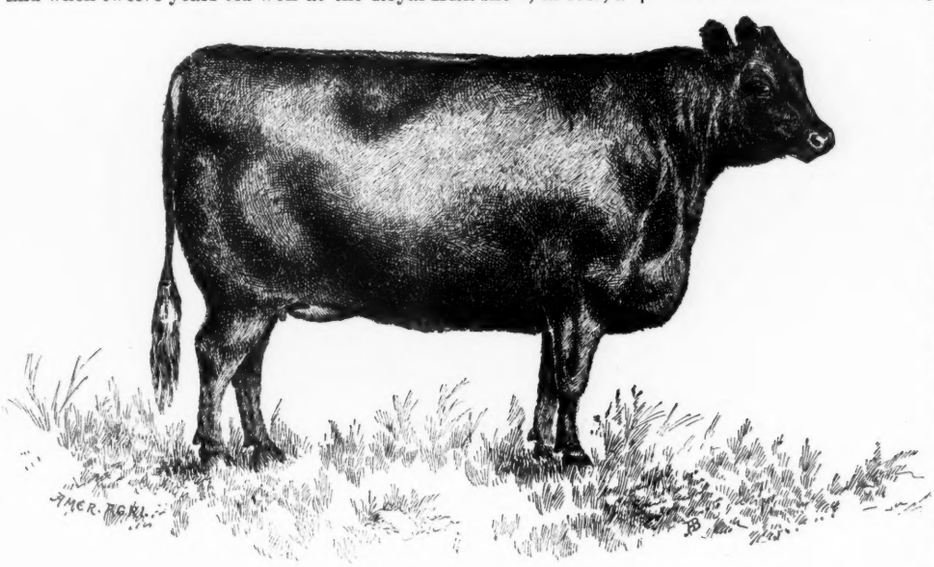


FIG. 2. THE ABERDEEN-ANGUS HEIFER BLACK CAP, OF LINN.

heifer calf by old "Paris." Achievement, which narrowly missed the same honors in 1889 was also bred by Mr. Stephenson, and besides other honors was champion of her breed at Southfield and Birmingham. Besides winning honors on the continent of Europe and in Australia and New Zealand, this breed has found great favor in Canada and the Western Middle States, carrying off first honors in all the best centers. Dot, champion in 1888 at Chicago, was a perfect beef animal of her size and age, and the names of Garinger, Geary, T. W. Harvey, of Turlington, Neb., and J. J. Hill, of St. Paul, are familiar to all stock-breeders.

Fig. 1 is a spirited portrait of the imported Erica bull Energy of Ballindalloch 7796 (4643), the property of T. W. Harvey, of Turlington, Neb. He was bred by Sir George McPherson Grant, of Ballindalloch, Scotland, and is a correct representative of the breed, possessing size, strength, substance and symmetry in a marked degree. Of all the favorite tribes of the Aberdeen-Angus cattle, the Ericas is one of the most aristocratic families of the present day, and they have proved worthy of the high celebrity they have obtained. They trace through a long line of reliable Angus ancestry; through the indefatigable energy and good management of the founder, this family has been brought into a distinguished position by reason of the long list of show-yard honors, and the group of meritorious bulls now to be found in the herds of Scotland and America. As a family, the Ballindalloch Ericas are distinguished for their stately heads, fineness of bone, short legs, lightness of offal, levelness and superior quality of flesh, well-laid shoulders, gayety of style, and, in a remarkable degree, family resemblance.

Black cap of Linn 8814 (15173), in her one year old form, is illustrated in Fig. 2. She is also owned by T. W. Harvey. This family, the Blackbird (Lady Ida), is one of the most highly prized of the day — they are particular favorites in America. Lady Ida was a most remarkable cow, she breeding past her sixteenth year, and never missing a year. The breeding of the sires of this family is remarkably rich and valuable. This family is peculiarly noted as being blocky, of early maturity, and the females are extra good milkers. A breed mainly devoted to the production of beef can hardly be expected to excel in milking power, but a female of this breed on J. J. Hill's North Oaks farm had not long ago the reputation of being the best milker there, and some strains are quite as good for milk as for beef, if properly handled for that purpose. In reproductive power, they are scarcely surpassed by any known breed of any rank.

THE SMALL DETAILS IN BUTTER MAKING.

GEORGE JONES.

There are many little details about the handling and care of milk of which a correct understanding and proper management by dairymen would go very far toward making the business more profitable, and also greatly economize labor. These small items may, in the aggregate, about equal a "great discovery," and may, possibly, when conjoined with the latter, make even this more valuable. Too many fail to understand the characteristics of milk, and its handling. To them milk is milk, whether warm or cool, in good air or bad, set to cream in a pail or a flat pan. Too few understand that the other elements in milk aside from fat have much to do in preventing successful cream-rising. This last lack of knowledge costs the average butter maker, if we are to believe our own eyes, and chemists' reports, not less than twelve to twenty ounces of butter for each one hundred pounds of milk. The sugar, albumen, and cheese in milk, which, at the time of milking, at ninety-six degrees of temperature, are all in a fluid state, and offer very little resistance to the rising of the fats, but afterward they take on substance, begin to coat the fat globules and make them heavier, and that means less power to rise.

Is there any method we can devise to prevent this? The centrifugal is its most perfect preventive, but as few have this somewhat costly machine, less expensive methods need to be sought. Two methods are yet at hand. Filling a can eight inches in diameter and eighteen inches deep with milk just drawn, and setting this can, so filled, in water at forty-three degrees, and maintaining the temperature at that point, is one excellent way; but for those who have no creamer, and must perforce use the open pan system, their way is to dilute this fresh drawn milk with water at one hundred degrees, to the extent of one quart of water to four of milk, and set away in a temperature of fifty-seven to sixty-two degrees. The idea in both cases is to retard the formation of viscosity, or the appearing of the elements in milk not fat. Quick cooling to forty-three degrees, and diluting with water, one fourth, practically have the same result.

No one should disturb a pan or can of milk when once the temperature has begun to fall. The fats seem to follow each other to the surface in little independent currents or lines, attracting the fats from each side of this perpendicular column, though they are very close together. Now if we disturb the pan or can we throw these little currents of perpendicular rising cream out of line, and they may not reach the surface. There is economy also in keeping cans of milk sealed by some method during muggy weather and thunder storms. Not that thunder sours milk; but that the milk, unprotected, sours much sooner during such weather is due to the increased number of germs floating in the air at such times; a hot, moist atmosphere being most congenial to their multiplication, and the milk gets its full share of the increase. No gain in cream-rising can be expected by any chemical change to the milk, as all such tend to increased viscosity, which means increased difficulty in the upward movement.

Another matter, especially in the winter, often causes a much greater expenditure of labor in churning, and that is "slowness" of cream in coming. This can almost always be helped by adding a quart of water at sixty-four degrees, in which a teaspoonful of salt has been dissolved, to each four quarts of cream, when ready to start the churn. A letter before me says: "By this plan I now churn in twenty minutes, when it took me three hours before I tried the plan you suggested." The butter comes with a granulation that is especially fine; it all seems to come at once, and is quickly freed from the buttermilk, and leaves the butter, when washed, in the fish-egg form so much admired.

DRY FODDER SILAGE.

JOHN GOULD, OHIO.

Much has been said in the agricultural press and at institutes in regard to the feasibility of making silage from dry, shocked corn fodder, and as to its advisability. Many farmers raise corn to sell, and they are left with a great abundance of fodder after husking, which is, as a rule, nearly worthless, or proves so at least. It is not advisable to provide animals to consume this fodder, as its feeding value so rapidly deteriorates that the cattle are practically left without fodder long before spring, and they have to be wintered out on other food. Others find themselves with surplus fodder, and still others, who have a silo, can not use their field fodder as it is husked too late to go into the silo with any assurance of making reasonably good silage, owing to its dry condition.

Last year a neighboring farmer, Mr. Griswold, of Summit Co., Ohio, in the last days of October, decided to build a wooden silo, and put his field corn, then six weeks in the shocks, into it. The silo was built, the shocks of corn husked, and the stalks drawn up and cut in half-inch lengths into the silo. Having farm water works, a hose was attached, and a sprinkler affixed, and, as each load of fodder was cut into the pile, at least eight gallons of water were sprinkled over the dry silage. The pit was filled and covered with two feet of straw. In four weeks the silo was uncovered, and the feeding commenced. The silage was found to have settled very well, and taken on fair heat, so much that the air had been forced out to the point of non-molding, except a trifling amount in the corners, and the result was an article of good No. 2 silage that proved the wisdom of his venture.

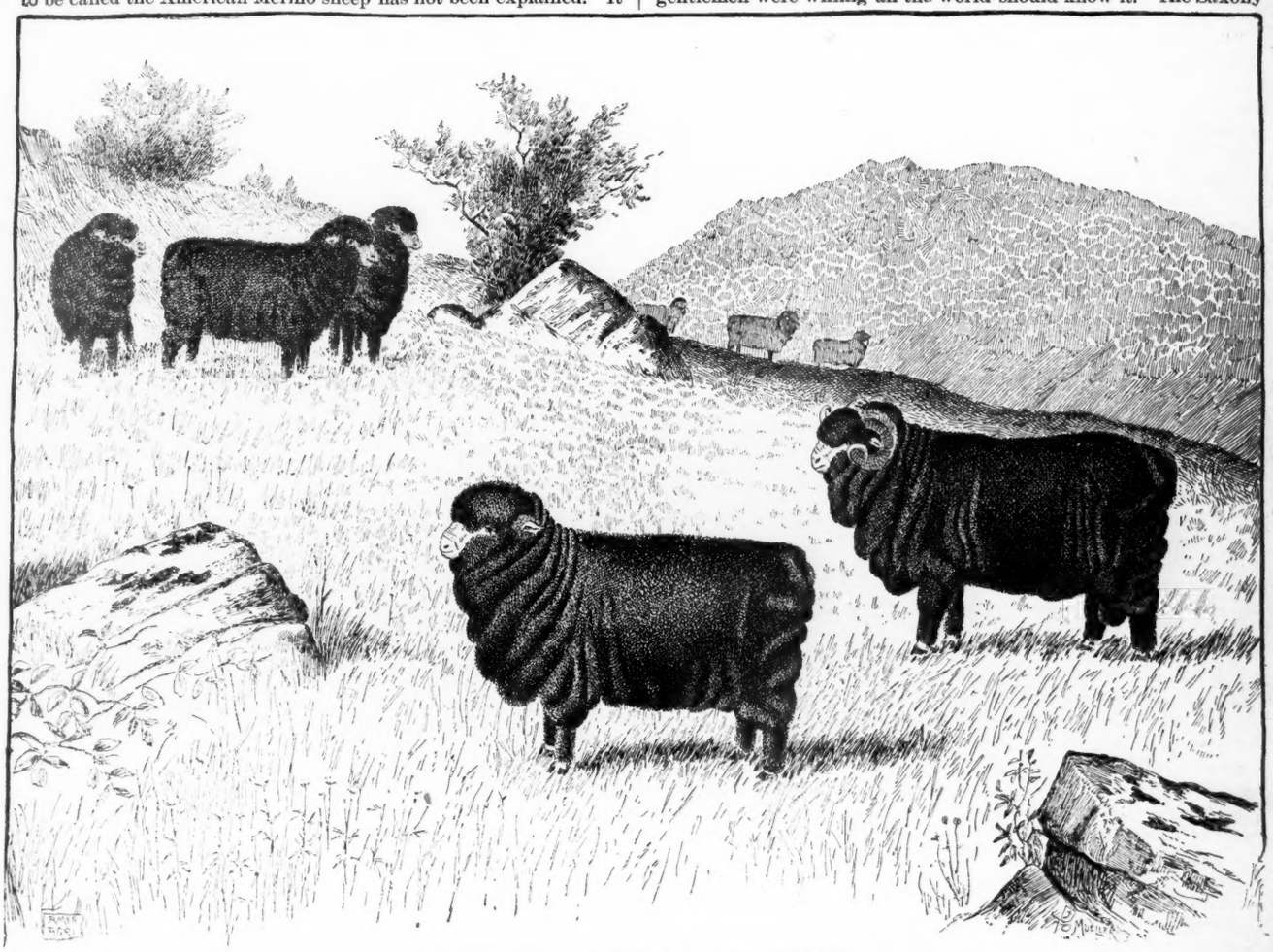
Later Mr. Edgar Huidekoper, of Crawford Co., Pa., filled a silo late in October with field corn, that had been shocked for five weeks. It was very dry, but was cut very *fine* into the silo, and fairly well wet down as the filling progressed. The resulting silage was excellent; sweet, odorless, and greedily eaten by the cattle, who thrived upon it. There was quite a loss at the sides by mold, no doubt the result of insufficient water being applied near the walls, where there should have been most. The corn fodder came out quite dark in color, the corn kernels "brown as a berry," but plump and full of "meat". The venture was voted a success to this extent: it is possible to raise more corn than the silos will hold, and after feeding out the contents of one it can be again filled with dry fodder, if wet down, with less loss, and a manifest economy in time and labor than to allow it to stand in the field and leach for weeks in the winter weather. The man who must sell the corn ears, can afterward put the husked stalks into a silo, and realize upon them for months afterward. There is no gain made over siloing green fodder, as there is not only a great wastage in the drying of

the stalks, but an unestimated litter that it is important to save, and at the silo the cutting takes more power, is less satisfactory, and more labor is essential. The idea advanced is, however, a matter of value. These examples, and others that could be mentioned, indicate that the siloing of dry fodder may be profitably adopted in exceptional cases, and an advance made on the methods of the past where older systems of farming are yet in partial force.

SPANISH MERINO SHEEP IN VERMONT.

R. M. BELL, ILLINOIS.

The history of Spanish Merino sheep greatly surpasses in interest that of any other class of domestic animals imported into the United States. The improvement of these sheep in pure lines of breeding, and the benefits they have brought to this country can not be studied without astonishment. Just why this breed of sheep should improve so marvelously as to be entitled, in so short a time, to be called the American Merino sheep has not been explained. It was due to a happy combination of circumstances which was not taken into account at the time, and but little thought of since.



VERMONT MERINOS AT HOME.

At the time of the introduction of these sheep they were sent into nearly all the States of the Union. We hear but little of them outside of Vermont, Connecticut, and New York. The flocks of Mr. Atwood, of Connecticut, and of Andrew Cook, of Long Island, were the most noted we know of. It was not long before Vermont began to be interested in these sheep and in time transferred these two most typical Merino flocks to the Green Mountain State. Vermont was so well suited to sheep and so largely engaged in wool-growing that the improvement of sheep and wool was of prime importance. While the two flocks referred to were strangely enough being bred by their owners in the strictest purity, the wool-growers of the Union, including Vermont, were absorbed in the improvement of wool by the use of the Saxony Merino blood. The cloth manufacturers were demanding broadcloth wool. It was supposed this demand would last forever and the enthusiasm was overwhelmingly in favor of these sheep. When they could no longer hold their admirers, and the Saxony industry collapsed hopelessly, it was discovered that the Spanish Merino sheep could hold its own even in the darkest hour of the Saxony industry. Vermont was quick to see the merits of the Spanish and set about the business of getting control of these two flocks that were without a doubt free from Saxony blood.

After Mr. Sanford returned from Europe, whither he had been sent to learn if the Spanish Merinos in America were the best Merinos in the world, the work was hastened of gathering up and removing the balance of the Atwood flock, as it was called, to Vermont. The Cook flock had previously been taken there and was in excellent hands. Messrs. Hammond, Hall, Sanford, and others were interested entirely in the Atwood blood; while Messrs. Rich, Beale and Wright gave all preference to the Cook blood. If it had been in our day it would have been said Vermont had a corner on the Spanish Merino sheep in the United States. Knowing this, these gentlemen were willing all the world should know it. The Saxony sheep had been unfortunate, and it was to the advantage of Spanish Merino breeders to complete the discomfiture of the Saxony and all other breeds that might rival the Spanish Merinos. The only possible rival was the French Merinos, and Mr. Sanford had imported some of these for the purpose of showing his friends what they were like. It was proposed to submit these specimens to a management suited to the Spanish but wholly unsuited to the well doing of the larger, early-maturing, highly-pampered French Merino sheep. The result was highly satisfactory to the Spanish breeders. Side by side in crowded management the Spanish were the hardiest, so much so that the French were an inglorious failure. Vermont had the best Merino sheep in the world. From this time on the work of improvement was steady and permanent. The experience of these Vermont breeders with the Saxony sheep, and what other information they had access to, guided them into the most fortunate course of breeding and in character of fleece. The most desirable harmony was maintained, and when the war of the Rebellion came Vermont was

ready for the tremendous drain of breeding animals which were needed to improve wool flocks. The good fortune that came to Vermont by this period of prosperity gave great celebrity to Merino breeders both in Vermont and other States.

The claims of Vermont breeders in breeding and furnishing reliable sheep to those who sought improvement of flocks by Merino blood were more generally recognized than was agreeable to breeders of other States. For a time the Merino sheep were known as "Vermont Merinos." It was sought for, no doubt, to complete the monopoly they wished to secure for Vermont breeders.

Considerable has been written lately on early Merino importations, and some eminent writers seem to have been betrayed into errors on the subject. Among other things the breeding of Mr. Hammond's typical ram Sweepstake has been grossly impugned—at least, by inference. Nothing of the kind was ever charged until after Mr. Hammond was in an honored grave. Dr. H. S. Randall, the most eminently critical and careful sheep- and wool-raiser of this century, was familiar with the history of the early importations of Merinos and personally acquainted with the Merino breeders in Vermont, New York, and Connecticut. He outlived Mr. Hammond, fortunately, and was able to defend his dead friend's reputation in the most satisfactory statements. No one believes it in Vermont to-day. The few who are disposed to believe that a cross was made with a French Merino ram do so for doubtful reasons. They do not wish it were so, but wish other people would. Dr. Randall, in a letter before me, says: "There are sufficient reasons other than the statements of Mr. Hammond for disbelieving that a French cross was made in the breeding of Sweepstakes." It will remain forever as a fact that no sane man can doubt that the Spanish Merinos were the origin of both the families of the American Merinos, known in other days as the "Vermont Merinos." It is as well established, also, that the foundation of these two families of "Vermont Merinos" were imported prior to 1811.

It is notable that the Spanish sheep found the natural conditions of Vermont so much better than existed in Spain, yet so much resembling Spain in healthfulness, that the improvement was very marked and gratifying. The plasticity of the sheep readily responds to surrounding conditions of climate, soil and temperature which govern feeds and secures thrift and development. Sheep taken from a poor country to a better one are influenced for the better, and if taken from a good country to a poorer one at once deteriorate. It will be readily seen then why Spanish Merino sheep might be expected to improve so readily when taken into Vermont. The same improvement is recorded of Spanish Merinos when taken to the agricultural countries of Europe and the world. They increase in size and in fleece when taken from any country to one giving better food supplies and sanitary conditions. It is doubtful, whether if the Spanish Merino sheep had been taken to a rich agricultural region like Illinois they could have succeeded so admirably. They certainly would have been very different sheep. The change would have been a violent one. Vermont was just right in character to give that development and physical stamina essential to usefulness and wool production; and capable of maintaining and bestowing that usefulness when placed elsewhere. One great hindrance to the value of American Merinos has been the ideal sheep which breeders outside of Vermont had in view. The type was a Vermont one and not such as the natural conditions surrounding them has sought to establish. The results were, Western breeders sought to retain the original model entirely, and nature opposed them, so they had to be going back for a typical ram. This caused less uniformity to appear in Western flocks than in Vermont flocks. The not breeding "in line" as known among breeders, has been made to account for all this and is only partly true. It was mainly due to the violation of natural conditions. There are striking instances where from some reason breeders have seen proper to abandon the attempt to conform to a Vermont or other standard, and struck out for themselves, or used rams from a neighbor's flock. The uniformity of such flocks, while differing widely from the old types, show pronounced characteristics that strictly and legitimately belong to the environments of the flock.

It is a practical fact that these changes of environments produce an immediate change of sheep, and the longer they are subjected to them the more the differences are apparent and the more fixed they become. When sheep are thoroughly fixed and established in accordance with the dictates of nature they may be said to be practically indigenous. While this is guided by the hand of man it can not be so called, since the same human help is necessary or the sheep deteriorates and drops back to precisely what a sheep would be in a complete state of nature under the surrounding conditions. This principle is useful in Vermont sheep. The natural food supplies in Vermont are favorable for all purposes, but sheep are raised upon grasses, green or cured, and with a limited grain allowance and that generally oats and peas. When these sheep are given the enormous grain rations of the West, an increase of carcass, fleece, and a change in quality of fiber is seen. They readily respond to the regimen of more generous sections. Such favorable changes are peculiar to the Spanish or American Merino sheep.

CARE OF SHEEP.

COL. F. D. CURTIS, N. Y.

For a number of years we have sheared our sheep the last of March or the first of April. The last two years they have been shorn about the middle of March. Most sheep have ticks upon them and then, however fed, they will not thrive. It is not pleasant to see sheep striving to get rid of ticks by chewing their wool and rubbing their sides against anything they can reach. Sometimes in desperation they throw themselves upon the ground and rub around and drag themselves about to get rid of the irritation caused by the ticks. These ticks multiply very rapidly, and if the poor sheep are left till the weather is warm they will nearly kill them before their fleeces are taken off. By this time the lambs have been born and have wool long enough for the ticks to hide in. The tormentors find their way upon the lambs and worry them thin. When shorn before the lambs are born, the ewes will rid themselves of the ticks; they bite and kill them. If not killed, most of them will leave the shorn sheep, as they can not hide. If hens are allowed to run with the sheep they will pick off the ticks. The lambs will be freed from the torments of these pests and they will do a great deal better. This is not all the benefit to be derived from the early shearing of sheep. The wool will be much cleaner and be freer from tags and filth. When sheep are turned out to grass they become foul with their own softened droppings and this results in more or less loss of wool. After the wool is removed the new-born lamb can find its natural food much more easily and more cleanly. The otherwise necessary work of tagging sheep is saved. Unshorn sheep will not eat as well in the pasture; they are hot, and so lie in the shade the greater part of the day, not feeding as much as they would with this incumbrance removed. The lambs suffer with their dams. Relieved of their fleeces, the latter eat more, and so furnish more food for their young. What the farmer may possibly gain in the increased length of the wool he will obtain as well at the next shearing. The extra weight covered by the accumulation of more oil or grease in the wool is overbalanced by the loss in the amount of wool and the wretched condition of the ewes, and the lack of milk for the lambs. We should all unite in refusing to wash sheep according to the old custom, and so do away with this cruelty to the sheep.

When sheep are sheared in March, or even before, the wool will not be anything like as dirty as when left till later. Some farmers are so unwise as not to shear their sheep until July. This is a greedy cruelty, as the sheep suffer terribly and the fleeces are just so much lighter the next year. By my system of shearing and taking some pains with the sheep to keep their wool clean, I have succeeded in breaking the grasping rule to shrink unwashed wool one-third and the shrinkage of my wool is only nominal. This is worth something as an entering wedge to a reform and the destruction of an outrageously unjust rule. My sheep are kept in a roomy barn or box stall. They do not go out of doors. When shorn they remain here unless a very cold spell comes after shearing, and then they are put in closer quarters where no wind can blow upon them, and they keep each other warm. I have never lost a sheep on account of shearing in cold weather, nor had one sick. If any were delicate a blanket would be put upon them while the weather was excessively cold. Sheep will do much better when shorn. It seems to give them new life, energy, and appetite.

A great many lambs are lost every year, simply because the ewes are not properly fed. The most of farmers do not feed their sheep enough. Others again feed them corn which induces garget and hardness; so that the lambs actually starve. They can not get the milk, or the udders of the dams are so inflamed and sore that they will not let the lamb suck. I once lost seven lambs in this way before I found out the cause. When this condition exists, the ewe should be held for the lamb to suck and she should be put into a small inclosure like a box, and tied in one corner with a halter so she can not turn around and keep the lamb from sucking. The

udder should be rubbed with water, as hot as the hand will bear, and smeared with some softening ointment which will not injure the lamb.

The best remedy for disease is plenty of preventive. Under no circumstances should sheep be managed so as to be constipated or feverish. The lamb is a tender animal, and in reality so is its mother. Timothy hay contains too much tannin to be a good food for sheep. The sheep is naturally constipated, its excrement being hard and dry. When fed straw or timothy hay this constipation is increased and the sheep is put into a painful condition, and it is almost impossible for it to be relieved of its dung; and it will be seen to stretch and roll and throw itself upon the ground in its exertions to relieve itself. Sheep in this condition will not do well in lambing. They should never be allowed to become constipated to such an extent. It is dangerous. It is not necessary. When fed clover hay and bran they never have the stretches; provided they have plenty of water. It is a very foolish laziness or carelessness which does not provide plenty of water for sheep, and sheep more than any other animal want water often, and it should be provided. They are dainty in their tastes and they want clean water, always free from taints. The troughs should be kept clean and no more food given to them than they will eat.

Oats are excellent food for ewes and lambs; but I prefer a mixture or combination of foods. My sheep never do better than when fed linseed meal one part and wheat bran three parts, by weight. A good ration could be made with barley one part, oats one part, linseed meal one part, and wheat bran four parts. Half a part of corn could be given in place of the barley. Sheep more than any other animals require succulent foods, and so strong is this want that it is a very wise plan to provide this form of food either in the shape of roots of some kind or silage. When silage is fed they do not need corn or barley, or any kind of grain which has a considerable percentage of carbonaceous material in it, as the silage will supply all of this form of food needed, together with that obtained from the other parts of the ration. I have had ewes do remarkably well with oats, a quart each a day, and clover hay. I have had them do well with two quarts of wheat bran a day, and clover hay. The clover hay is somewhat loosening in its effects, and takes the place of succulent food the best of any dry forage plant. Silage is most excellent and can be fed successfully with no other grain food than wheat bran. The American farmer does not appreciate the value of common flat turnips in connection with sheep and swine husbandry; and I doubt if he ever will.

Turnips are a well-balanced food, and of great value in wintering sheep or swine and in fattening sheep. Sheep should be fed so as to keep them in a vigorous and growing condition. When this is the case they will rarely lose a lamb or fail to own their offspring. It is the weak and helpless mother which usually does not own her young, and many times she is too feeble to rise and too sick to exercise her maternal instincts. The ewes should have their lambs before going to pasture, as they are cared for so much better, and they will always have milk enough if well fed on the nitrogenous foods I have commended, with plenty of water. They should be driven home every night and fed at the barn.

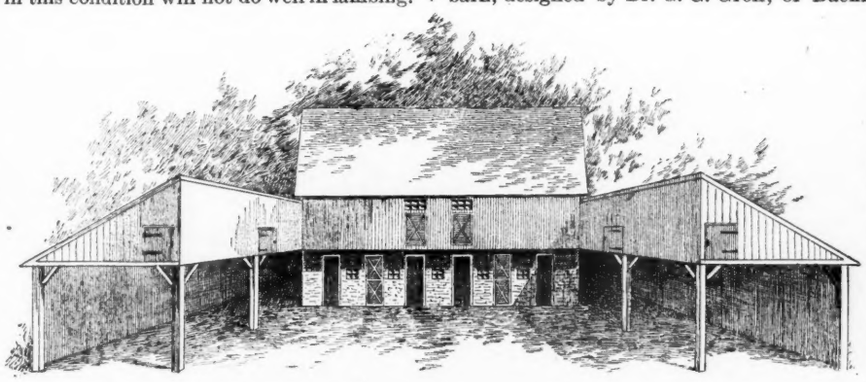


FIG. 1. PERSPECTIVE VIEW OF BARN.

A PENNSYLVANIA BARN.

We give herewith a perspective view and plans of a capacious barn, designed by Dr. G. G. Groff, of Bucknell University, Pennsylvania. It is designed for a farm of one hundred acres. The length of the main structure is sixty-three feet, with a width of thirty feet. It is built of field or quarry stone to the upper floor, and above that with a substantial frame covered with vertical siding and battens. Fig. 1 is a perspective view of the south front with yard and sheds. The latter are each twenty feet wide and forty feet long. The basement, Fig. 2, in which are the stables, is entirely above ground leaving them quite free from the unwholesome dampness which is the bane of stables wholly or partly underground. There are stalls for ten horses and eighteen cattle, besides a room for cutting roots, and a harness closet. At F F F are shutes through which grain and forage are delivered from the floor above. Fourteen feet from the upper side of the barn is a sloping bank of earth, which affords an inclined drive to the main floor. The space between the bank and the barn is bridged over with planks. In the area beneath are situated a cistern and a root cellar. The barnyard, forty by sixty-three feet, is flanked on either side by sheds, each having a loft for straw. One of these sheds may be finished off in box-stalls for horses, others for cows at calving

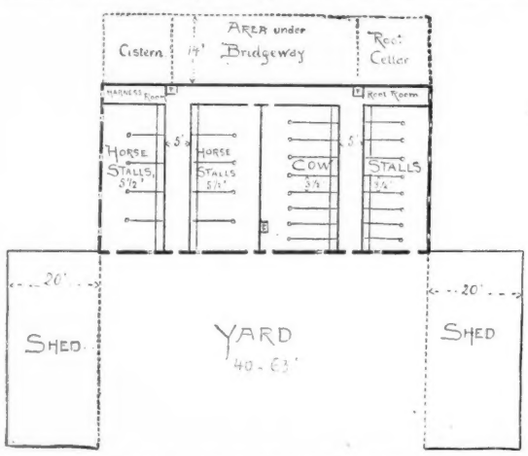


FIG. 2. PLAN OF FIRST FLOOR.

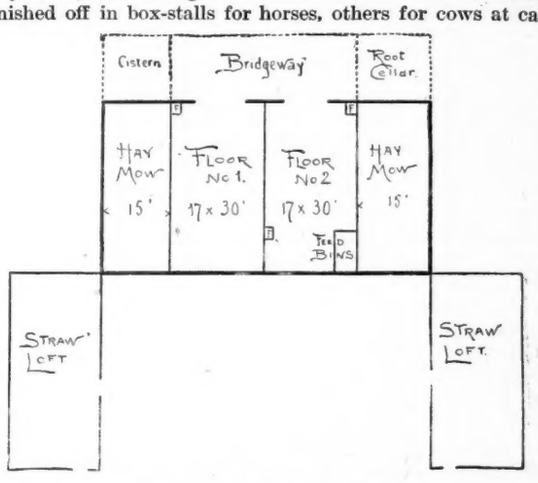


FIG. 3. PLAN OF SECOND FLOOR.

time and pens for calves. The other is left open as shelter to stock and manure.

The second floor Fig. 3, contains two hay mows, each fifteen by thirty feet, and two floors, each seventeen by thirty feet. Floor No. 1 is used to drive into while filling the nearest hay mow, and may then be filled with unthrashed grain, straw or hay. The points of excellence claimed for this barn are: 1, warm, well ventilated stables. The ventilators are along the whole front of the stables under the floor overhead. 2. An unobstructed view over the whole of the stables. No racks are used, only troughs, so that the stables are light, and one can see in a moment where any disturbance is occurring. 3. Large box-stalls for horses or cows when about to drop their young. 4. Large shedding to protect stock from the wind, also to protect the manure from the rain. No manure should

be out in the weather. 5. The mows are narrow and high so that they will hold a great quantity of hay. 6. There are two wide barn floors, so wide that a horse and cart can easily turn upon them. No. 1 is the thrashing floor. No. 2 is for convenience of filling the hay mow on the east. When that is full of hay then the floor, No. 2, is filled, generally with the wheat crop. 7. Granaries, bran and feed bins, straw sheds, etc., are all so arranged that the work of the place may be performed with the least labor. 8. The barn faces the south to most protect the stock.

A LESSON FROM FIRE-WEEDS.

PROF. BYRON D. HALSTED.

When a brush heap is burned, there usually soon develops among the ashes a rank growth of weeds. These weeds, as a rule, are different from the surrounding plants growing upon soil over which there has been no fire. This fact is so commonly observed that several kinds of plants are called fire-weeds, and about the curious growth of which there are many strange stories. Some have gone so far as to find an illustration of what is called spontaneous generation in the sudden springing up of plants over a place where a hot fire was burning a few weeks before. By spontaneous generation is generally understood the springing into life of organisms from previous lifeless matter. In other words, some hold that no seeds preceded the weeds in the burned places, but the fire in some unexplained way warmed into life the substance below the glowing embers.

It must be confessed that the subject is somewhat puzzling, but as the doctrine of spontaneous generation is not considered tenable, some other explanation must be offered in its place. It is assumed that whatever plants grow upon the ash heaps, and especially at the edges, came from seed. It is to be borne in mind that one result of the fire is a deposit of a considerable quantity of potash. This is one of the most essential ingredients of plant food. Along with the potash there is also an accumulation of phosphoric acid, and this is another food element usually lacking in all poor soils. The burning of the brush, therefore, provides a seed bed rich in at least two of the three most essential substances, which are absent from a barren soil. This deposit accounts for the rank growth of the plants that quickly spring up upon and around the burned heap. It is well known that a good soil does not conduct heat rapidly, and in an ordinary burning the seeds a few inches below the surface would not be destroyed.

If the seeds were already there, the wonder may be as to how they reached their destination, and why it was they failed to grow. It is well known that the fire-weeds, as a rule, have seeds which are provided with some evident means of migration. Some sorts have airy balloons to the seeds for the transfer of the germs. Other plants which commonly spring up in the burned patches in pasture or wood-lot produce an abundance of berries eaten by birds, and the seeds being indigestible are dropped in the brush heap. There is no difficulty in accounting for the migration of the seed. This also suggests the pregnant thought that seeds of these plants are long-lived. For example, the seeds deposited in any spot may not find the conditions favorable for germination until several years have passed. Persons who do not give any thought to the subject rarely form an idea of the vast multitude of seeds that lie dormant all around them from one year to another. If the seeds of the fire-weeds reach the place where they grow before the brush heaps are burned, it must be evident that the same kinds of seeds are scattered elsewhere over the whole field, but, conditions not favoring them, they remain dormant and hid from view.

The ordinary soil covered by turf is not suitable for the germination of fire-weeds. They can not get a foothold; but if the turf is cut by a wagon track, or in some other manner the sod is broken, then the weeds will grow; but perhaps not so vigorously as elsewhere, because the ashes contain ingredients needed by them for their best growth. It is, therefore, by no means sure that fire-weeds grow only where fires have been. If any one will look for these same kinds elsewhere, in fence corners, around dung heaps, or even in newly cleared wood-lots where no fires have passed, his search will usually be rewarded by finding them in abundance.

There is another view to be taken of the appearance of the rank weeds upon burned areas, and that is, that the seeds have found a lodgment after the fires have passed. From what has been said of the general distribution of these same kinds of plants in out-of-the-way places it follows, in view of the ample means for distribution, that any good place will be quite sure to get a sufficient number of seeds to account for the growth—provided the development accords with the previous seed formation elsewhere—that is, if the brush is burned in July there will be fire-weed seeds at that time ready for distribution; but if the fire is in April, and a rank growth follows immediately, it is quite probable that the seeds were under the heap, and being unharmed, and stimulated, are ready for a rapid development.

The fire-weeds suggest several lessons. Like all other plants, they come from seeds. Those seeds are usually provided with ample means for their dispersion, and find their way to the region burned over either before the fire, in which case they may have remained dormant for several years, or after the brush has been reduced to ashes, when they may come directly from the parent plant upon the "wings of the wind."

These fire-weeds are not, as a rule, of much injury to ordinary crops. If abundant in meadow, pasture, or cultivated field, their presence in the burned spot would be a natural consequence. It therefore need not be urged so emphatically that they should be destroyed whenever found. However, as they are of no use, and may be an occasional nuisance, it is best to mow them down, that they may give their place to plants of more economic importance, and not ripen their seeds.

ENEMIES OF THE POTATO.

One could almost say that man is one of the worst enemies of the potato, if we may judge from the manner in which he sometimes neglects one of his best of vegetable friends. While it requires a warm, rich soil, he gives it a water-soaked clay bed, and when the feeble plants come to the surface no encouragement is given them to struggle against the weeds that threaten to choke out the last spark of life.

Many insects prey upon the narcotic herbage of the potato, the most destructive of which is the Colorado beetle. But with this well under subjection by a fully understood plan of applying London purple or Paris green, there remains now only to develop the methods of overcoming the blights and rots, the worst of which is the so-called wet rot. This is due to the growth of a low form of vegetation closely related to the mildew of the grape. It first appears on the leaves as frosty patches, and from there it grows down the stems, and finally its slender threads reach the tubers, causing them to rot.

From the fact that the leaves are first attacked, and the rot works down the stems to the potatoes, it is evident that when the leaves and stems are dying prematurely the tubers should be dug at once. Let the potatoes dry thoroughly in the field after digging, and store only the sound ones in a dry place with a good circulation of air. Avoid a damp, poorly ventilated room. The vines and all decayed tubers left in the field should be burned.

As preventive measures at planting time it may be suggested that a second crop should not be grown where the previous crop failed from the rot. The seed should be free from the trouble, and therefore only sound potatoes are suitable for planting. Early varieties, planted early, are most apt to escape, for the rot does not get started usually until midsummer. Experience has demonstrated that it is best to hill the potatoes somewhat at the last plowing, as many germs of the disease fall from the leaves and are washed down to the tubers with the rains.

DOGS ON THE FARM.

A truck farmer of Long Island, who does not feel disposed to have his name made public, asks what in our opinion is the best way to protect farmers on Long Island from the annoyance and damage from worthless dogs. This "dog-question" is one of great importance to the whole class of farmers throughout, not only this, but every country of the world. We admit the pleasure and profit which may be properly derived from the keeping of good, well-bred dogs by farmers. With dogs, as with other farm animals, those only should be kept which pay for their keeping in rendering us pleasure and profit. But as pleasure does not yield so large an interest on the investment as does profit, the farmer must consult his personal interest first, as profit pays for the farm and farming expenses. A good ratter on a farm will always save the farmer money. Besides killing the destructive and wasteful vermin, such dogs are valuable watch dogs and protect the family and farm property. A heavy tax on every dog in every town will remedy very largely the numerous evils inflicted by worthless dogs. People

who do not need dogs are the very ones who keep most of them; unless those who own but do not keep dogs outnumber the former. It is a common saying that a poor man has one or two or a few dogs, while a very poor man owns a baker's dozen. It is these worthless marauding curs that despoil crops, gardens, kill sheep and poultry, worry our pet cats and perpetually provoke mankind to break the second commandment.

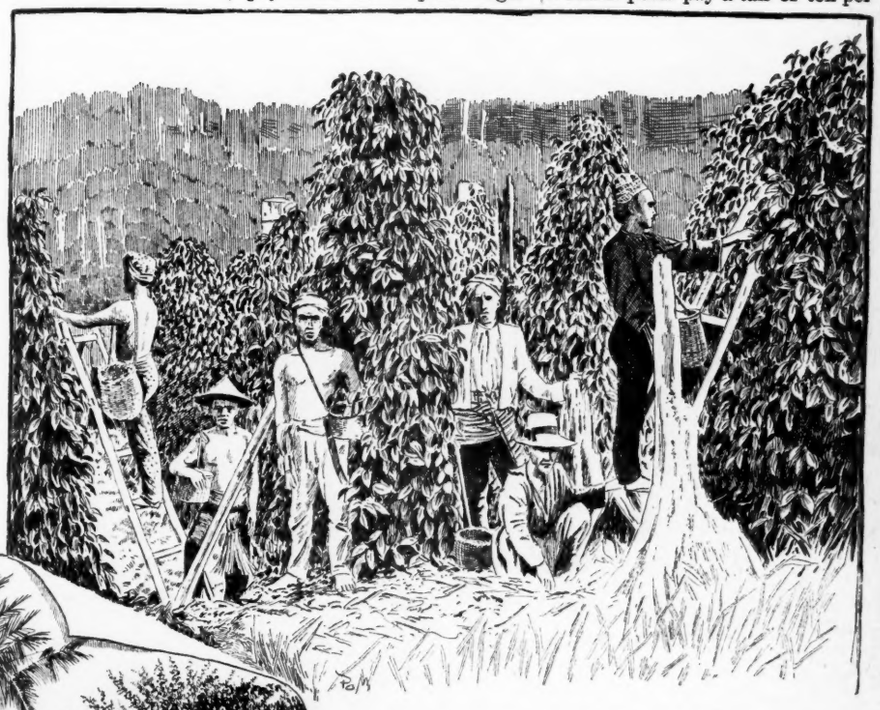
There is another remedy for the resolute and fearless farmer, and, though it makes a great noise in the neighborhood, yet is a prompt and sure remedy for the dog nuisance: the shot-gun.

AMONG THE FARMERS OF SIAM.

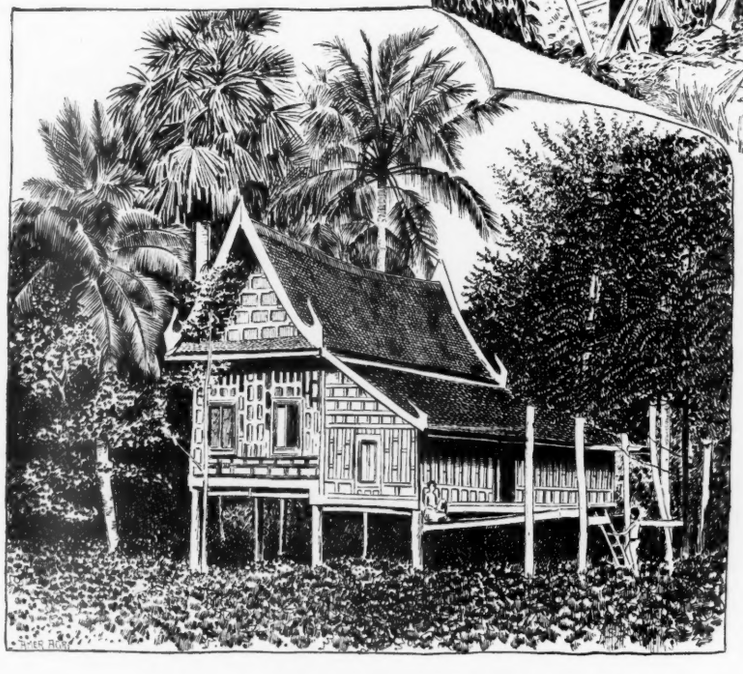
FRANK G. CARPENTER.

The biggest farmer in the world is the King of Siam. His plantation is five times the size of the State of New York and his field hands number six millions. The other kings of the far East have only a nominal right to their lands and their subjects. The Siamese King owns his, body and soul. Every foot of territory in his realm belongs to him, and his people are his slaves. Siam is naturally one of the richest agricultural countries of the far East. Its soil, poorly tilled, is so rich that it produces crop after crop without the aid of manure; and though not one-twentieth of the land is cultivated it brings the King an annual harvest of $10,000,000, and he has a surplus of $50,000,000 piled up in his treasury.

Siam is a great wedge at the lower end of the vast peninsula of Indo-China. It is bounded on the sides and at the top by the French possessions of Tonquin and the English principality of Burmah. These two nations are casting their covetous eyes upon it. It is a land of some mountains and many valleys. The mighty Menam river flows from north to south through it, and the valley of this is one of the richest agricultural regions of the world. Forty miles from its mouth lies Bangkok, a town of about 700,000 people, 600,000 of whom live in floating houses fastened to piles along the banks of the rivers. These floating houses are found all along the valley of the Menam, and they line the rivers of the interior. During the rainy season a vast part of the country is flooded, and the farmers go from one part of it to another in boats. Many farmers live in floating houses, and when their estates lie along the banks of the river they can float from one end of their little plantations to the other by simply loosing the bands which bind their houses to the piles. The country has a system of land laws, and though the King really owns every foot of it, and could confiscate estates if he would, the farmers have a certain right of tenure to their lands, and as long as they pay their taxes they can buy and sell them and will them to their children just as they do in other countries. The taxes constitute the King's rents, and these are very high. All land is taxed at ten per cent of its value. The crops are taxed, and in fact everything that the farmers own must pay a high rate of taxation. There are taxes on imports and exports. All cultivated lands pay about sixty cents an acre. Fruit trees pay a tax. Houses, whether floating or stationary, are taxed, and all sorts of boats have each their fixed tax per year. Floating houses which have goods for sale pay about $1.50 yearly for each room in the house, and those used as gambling shops and lottery stations pay an additional percentage. Wooden posts pay a tax of ten per cent. Firewood pays ten per cent, and vegetables and chickens, ducks and hogs must give a certain percentage to the government, according to their weight. In addition to this there are taxes on all kinds of fishing implements, on farm tools, and in short on everything that the Siamese wears, eats or drinks. The biggest tax, however, is that of labor. This big Farmer-King has the right to call upon every one of his tenants for three months of hard labor during the year. He delegates this right to the governors of his provinces and the heads of villages, and the result is that often when the farmers should be harvesting their own crops they have to turn in and harvest those of the King. The women, consequently, have to do the greater part of the work, and the men are little better than slaves. This three months may be increased, as the necessities of the King demand.



SIAMESE PEPPER HARVEST.



SIAMESE FARM HOUSE.

The Siamese farmers, like those of all other Eastern countries, huddle together in little villages and they go out from these to work their fields which surround the towns. The fields are unfenced, and cattle are herded all the year around. Cattle thieves and crop thieves are numerous, and it is only by eternal vigilance that the farmers are able to save their crops. The principal Siamese crop is rice, and rice constitutes the food of the people. There is no better country in the world for raising it than Siam. The lowlands are easily irrigated and the rainy season lasts from May until October. The climate is tropical and the winters are like our summers. Everything grows almost spontaneously, and two crops a year are not uncommon. The rice fields are laid off in lots of about one-third of an acre, each surrounded by an embankment of earth about a foot and a half high for the purpose of holding water when the land is

prepared for planting. The rice is first sprouted in little patches, and when it is a foot high it is pulled up, tied into bunches and taken to these little fields, which are then covered with about six inches of water. It is there transplanted, the men, women and children bending over and thrusting the stalks deep into the soft mud under the water. A good workman can set out about a third of an acre a day, and the planting season is any time between June and October. The harvest time comes along about Christmas, and in many parts of the country these rice fields are artificially irrigated.

The irrigation of Siam increases every year, and it is chiefly the work of the Chinese settlers. The Siamese themselves, owing largely to their servitude under the King, are lazy and do not accumulate. Many of them go into the Buddhist priesthood, and the bulk of the work of the poor families is done by the women. The Chinese settlers are the hard workers of Farther India. They have to pay a poll-tax, but they are not subject to forced labor. They are industrious and economical, and they come by the thousands into Siam. They marry Siamese girls and in time acquire property. The King is very anxious to increase the cultivable area of his territory, and he now levies no tax for five years on new fields, and the man who clears a piece of land has a property right to it. The Chinese in this way are fast eating up Siam. They do the main part of the business of Bangkok, and their numbers are so large and immigration is so great that the Siamese race will eventually be swallowed up by them.

These Chinese have introduced their methods of irrigation, and there are others which have been in use from time immemorial. The ordinary methods are much the same as those of other Eastern countries. Two women or girls dip up water in a basket, pitched within and without to prevent its leaking. They stand on the higher bank above the canal and give the basket a swing by four strings which they have attached to it. They pull these strings as it dips into the water and lift from six to eight gallons to the higher level where it runs off into the fields. The system of having small buckets around a great wheel, which is turned by a man or woman walking up it like the dog on the churn, is also in use and in some places the old-fashioned well-sweep is used. Labor is very cheap. Farm hands get from one dollar to one dollar and a half a week and board themselves, and there is a great deal of debt labor.

Money brings high rates of interest in Siam. The prevailing rate on mortgage paper is fifteen per cent, but the interest is allowed to run only until it equals the principal, and after that it stops. In case however that the debtor can not pay his creditor the latter can enslave him and he has to work out the debt. He can put him in chains and can force him to work by whipping. As a rule he keeps lending him more during his servitude, and the result is that such slavery sometimes lasts for many years. I saw near Bangkok men in chains engaged in felling and hauling timber, and I was told they were debt slaves. They had steel anklets with great iron bars connecting them on their bare legs, and in one or two cases several men were chained together. The mortgaged farmer of Siam has a much worse prospect than he of our Western States, for if his land will not sell to pay the debt he himself has to go into the service of his creditor. Mortgages are entered into here just as they are in America, with the hope of paying off the debt at harvest time.

This is the great time of the year, and the harvesting of Siam is worthy of mention. When the rice is ready for cutting it looks very much like an American oats or wheat field. If the land is dry it is cut with sickles, and stacked similar to American wheat. When the waters are slow in going down the farmers sometimes move through the fields in boats and cut off the heads of the rice and put them into baskets. The thrashing is done by buffaloes or oxen. A dry place is first picked out for a thrashing floor. The grass is cut off and the ground is made smooth and level, a coat of plaster of cow manure and water being spread over it to make it solid. After this is thoroughly dried a pole is planted in the center and the grain is then thrown all about this for a radius of fifteen feet or more. To the pole six or eight buffaloes or oxen are then tied side by side and they are driven around and around over the straw until the rice is tramped out and separated. The Siamese have never heard of the the Society for the Prevention of Cruelty to Animals, and they do not hesitate to push these oxen to the utmost. One of the favorite ways of accelerating their speed during the thrashing is by twisting the tails of the beasts, and with the goad in one hand and the ox's tail in the other a naked Siamese boy can get a racing speed out of a very poor beast.

After the rice is well thrashed it is winnowed in the wind and then packed away for use or for sale. That which is used by the family is hulled by the women, who pound it out with mortar and pestle. Of late years some steam rice mills have been established in Bangkok, and the first was put up by an American firm, but they did not succeed and they sold their plant. Of late years, however, the product of Siamese rice has so increased that there are now fifteen steam rice mills in Bangkok, and these mills are in charge of foreign engineers.

The farming implements of Siam are of the rudest description. The cultivation of the whole country is done with a plow that an American farmer would not use. It consists of a crooked stick with one handle, and it has a plowshare of cast iron about as big as a man's hand. This plowshare has a little hole in one end of it in which one end of the crooked stick is put and the whole outfit costs about $1.25. It cuts a furrow about two inches deep and five inches wide, and it is drawn by an ox or buffalo which is attached to it by a yoke and rope harness. When two oxen are used the plow has a sort of tongue which is fastened to the yoke on the necks of the team and in both cases the animals are driven not by lines but by a sort of rope halter fastened to a hole in the nose of the ox. The harrow is equally rude. It consists of a long rake with wooden teeth attached to a bamboo tongue which is fastened to the ox's yoke. It has an oval handle which the woman or man holds and upon which she bears down in order to break the clods and drive the teeth in the deeper. Siam raises plenty of vegetables and fruits. Pineapples are a drug in the market; and lemons, citrons, and pomegranates are abundant. Most delicious oranges cost half a cent apiece in Bangkok and you can get bananas for two cents a dozen. The trees are always green and the roses and other flowers bloom all the year around.

One of the most profitable crops is the pepper crop, and Siam exports about $200,000 worth of black pepper every year. The pepper plantations are largely managed by Chinese. The berries grow in racemes, like currants, from a climbing vine trained like a hop vine upon trees or tree stumps which have been cut off high up from the ground, and good-bearing vines will yield two good crops a year. Very little cultivation is needed. Cuttings of the vines about eighteen inches long are buried at the root of the tree, and as they grow the vines are trained toward the trunk. In October and November the plants are manured with a mixture of leaves and cow dung, and in some cases with heaps of leaves. On dry soils it is necessary to water the plants every other day during the dry seasons, for the first three years, and at the age of four or five years the plants begin to bear. They continue to bear from seven to fourteen years, and I am told that the crop is a most profitable one. The principal crop is harvested in December and January, and the other becomes ripe about July or August. The harvest commences as soon as the berries begin to turn red and they are collected at this time and dried for the market. A good average yield for a plant is two pounds of pepper per annum. At the right hand of the accompanying illustration is a pepper-harvesting scene, and at the left a farm house, away from the water, built upon posts, to enable the dwellers to escape the unhealthful emanations of the earth in that tropical climate.

The marketing of Siam and the selling are largely done by the women. I visited one of the markets in Bangkok. It was on the main land and consisted of a great low shed filled with platforms about twenty feet square and a foot high. These platforms are covered with great palm leaves upon which were spread the wares of the market women. In the center of each platform was a pillar which helped to support the roof of the shed, and against the four sides of this pillar four women leaned their backs. Half naked and with her legs crossed, each had a number of little piles of onions, pieces of cabbages and other vegetables before her, and I looked in vain for either scales or measures. In this market the only measure was the eye and everything was sold at so much per pile. There was no paper or string used in wrapping up the vegetables, and everything was put into a palm-leaf and fastened there with a little wooden tooth-pick-like pin. Each woman had a betel box and some cigarettes beside her and all chatted and smoked as the market went on. The whole looked very barbarous in comparison with the markets of our western civilization, but Siam is now at the beginning of a change.

The present king is the most enterprising ruler the country has ever had. He has established an Agricultural Department and is doing all he can, restricted as he is by the ignorance and superstition which prevail, to advance the interests of his people both as to civilization and wealth.

NEW STRAWBERRIES.

In the accompanying engravings are represented some of the most promising new varieties of strawberries which have come to our notice the past season. The illustrations show average-sized specimens of the respective varieties, and the following descriptions

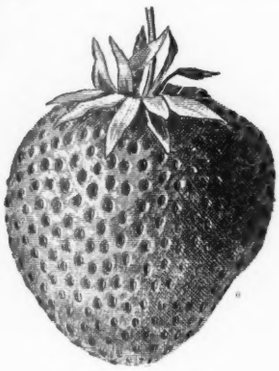


FIG. 1. LADY RUSK.

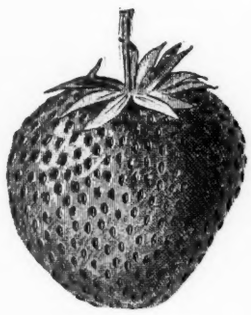


FIG. 2. DAISY.

are given principally from notes furnished by Mr. John T. Lovett, Monmouth Co., New Jersey.

Lady Rusk.—(Pistillate.) This variety comes highly recommended, and from what we can learn of it deserves extended trial. Mr. William Stahl, the introducer, considers it the most profitable strawberry grown, and describes it as being several days earlier than the Crescent; large and holding its size throughout the entire picking. It withstands heat and drought; is a very vigorous grower, and immensely productive. Fig. 1.

Daisy. — (Pistillate.) A seedling of Crescent fertilized with Cumberland. Berries uniformly large; nearly globular; pale scarlet; flesh medium firm; quality very good; season medium. The plant is a good grower, standing well under a hot sun. Fig. 2.

Shuster's Gem. — (Pistillate.) A cross between Crescent and Sharpless. The principal merits of this variety are its great productiveness of good-sized berries. Our illustration shows a berry

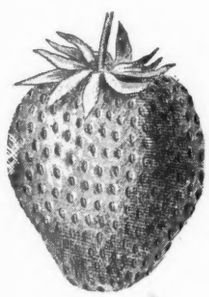


FIG. 3. SHUSTER'S GEM.

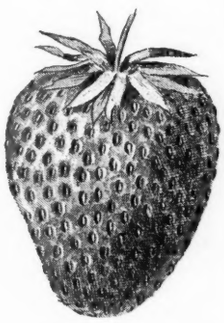


FIG. 4. PEARL.

of rather below the general average size. Its color is a bright glossy scarlet; flesh firm, and of good quality. The plant is usually strong with clean, healthy foliage. Fig. 3.

Pearl.—Berries large, conical, bright crimson, remarkably uniform in size and of excellent flavor. The plant is vigorous and healthy, and a good bearer; season early. It appears to thrive under varying conditions and treatment, and promises to become a leading variety. Fig. 4.

Haverland. — (Pistillate.) Large, elongated-conical. Bright, glossy crimson, of very handsome appearance. It is moderately firm and of fair quality. For productiveness this variety seems to be unsurpassed. Fig. 5.

Jessie.—This variety, although not strictly new, is still not as well known as it deserves, and among the many varieties received at our office the Jessie received as high encomiums as any. The berries are large and showy; of good quality, and the plants are vigorous, healthy, and productive. Fig. 6.

Warfield No. 2. Resembles the Crescent, which it is claimed to rival in yield, size, beauty, and firmness; quality sub-acid, but good. The plant is a vigorous grower with bright healthy foliage. Fig. 7.

Cloud.—(Cloud Seedling) (Pistillate.) This is claimed to be the earliest large strawberry, and to ripen two weeks ahead of the Wilson, which it resembles somewhat in shape. It is of deep scarlet color; ripens evenly; is firm enough for a shipping berry, and seems to be especially adapted for the Southern States. Fig. 8.

Parker Earle.—A seedling of the Crescent, fertilized by pollen of a seedling of Miner's Prolific. This variety is introduced from Texas, where it has endured the hot dry summers remarkably well, and proved enormously productive in light, sandy soils. The berries are large, conical with short neck, regular and uniform, glossy bright crimson, flesh firm, reddish, and of very good quality. Season early to medium.

Bubach.—(No. 5) (Pistillate.) For size and productiveness this variety stands in the front rank, and leaves nothing to be desiredfor home use, but for marketing it lacks the necessary firmness. Its season is medium to late.

SOME GOOD NATIVE CLIMBERS.

One of the most popular of all vines is our native *Ampelopsis*, or Virginia Creeper. It is especially so in autumn, at which time its foliage takes on shades of most brilliant crimson and maroon. It is extremely useful for covering large walls, because of its vigorous growth and its ability to cling to smooth surfaces without any assistance.

Another good vine is *Celastrus scandens*, or Bittersweet. This plant has rich and pleasing foliage which is never attacked by

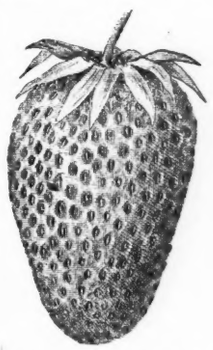


FIG. 5. HAVERLAND.

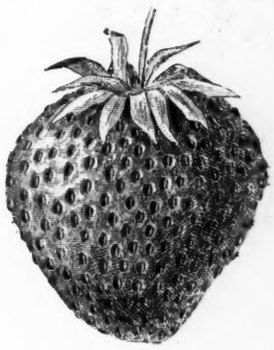


FIG. 6. JESSIE.

disease or insects. It is laden in fall with clusters of scarlet fruit, each berry inclosed in an orange capsule which is three-parted, the divisions turning back and disclosing the fruit within. For covering summer-houses or training over gateways we have few better climbers.

Our native grape is excellent for covering porches, summer-houses, old trees, and fences. It has fine foliage—produced in the greatest profusion—and its feathery clusters of flowers are delightfully fragrant.

One of the most beautiful of climbers is *Clematis Virginiana* called, in many localities, Traveler's Joy, and in others Virgin's Bower. In June or July it will be covered with thousands of airy, delicate white flowers of delicious fragrance. A large plant in full bloom is one of the prettiest sights imaginable. It can be found growing in many parts of the North; chiefly along brooks and rivers, and in corners of old pastures. It is easily transplanted.

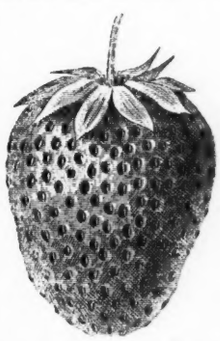


FIG. 7. WARFIELD NO. 2.

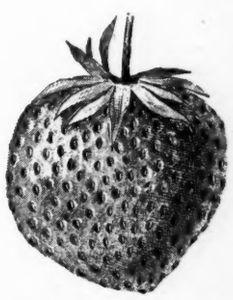


FIG. 8. CLOUD.

Its long, trailing branches are very graceful and effective for use in large vases in combination with brighter colored flowers. For covering porches, rockeries, or summer-houses it is unexcelled. It grows rapidly, is hardy, and will take care of itself if something to cling to is furnished.

AN INEXPENSIVE GREENHOUSE.

MRS. P. M. A. CROZIER, MICHIGAN.

My little greenhouse is not much of an affair, but it has given a good deal of pleasure, and proved useful. Size about eleven by sixteen feet, span-roof, four sashes on a side, door in one end. About four feet to the eaves, boarded up and down, outside and horizontally within, with building-paper between. Benches or beds on two sides and one end. Heated with a camp-stove—minus the oven-drum—and five-inch stove-pipe running from stove under bench

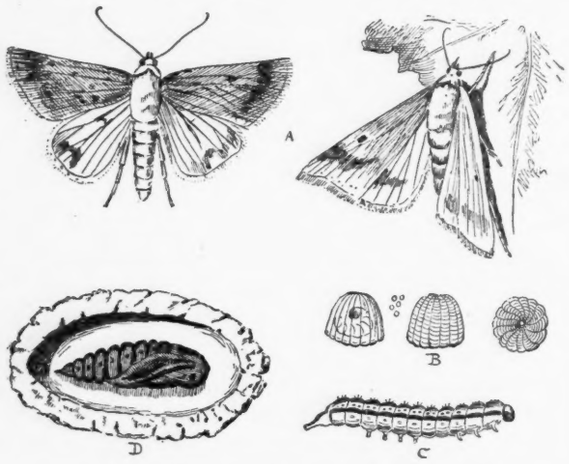


FIG. 1. TRANSFORMATIONS OF THE CORN-WORM.

near one corner, around nearly to the opposite corner, across the aisle, then up through the bed, and out at the roof. The soil in the beds consists mostly of a mixture of light sand and muck. The cost was about as follows:

Lumber	$15.38
Carpenter's bill	10.00
Glass, 120 lights at 5½c	6.90
Putty	.76
Points, door-latch, tin	.35
Nails, hanging screws, building-paper	3.30
Oil and paint	1.20
Camp-stove and pipe	8.30
Thermometer	.35
	$46.54

The digging and setting of glass were done by members of the family.

This little house has been in use two seasons for starting early plants. The first year seeds were sown early in March, last year in February. Both flower and vegetable plants have been raised, and it has furnished early radishes and fair lettuce. Last year a fine assortment of flowers grew and blossomed in the beds. Generally the house has been very satisfactory, and the plants have done well. Once or twice injury has occurred from smoke, but the stove has usually drawn very well. Some other mode of heating might be preferable, but this has served a good purpose.

Care of Shrubs.—Flowering shrubs that require pruning at all need it now; and all that is to be done is to cut away the old wood, close to the ground, in order to give the young shoots a chance. This throws the whole strength of the plant into the new and flowering branches. Never cut back a flowering shrub in order to make it "shapely"; that just throws it out of shape. The beauty of the *Spiræa*, *Weigela*, *Deutzia*, and all shrubs of this character, is their long and graceful shoots, clothed from root to tip with flowers. Such may be had by judicious pruning and liberal feeding. Shrubs will not thrive in an impoverished soil; they may struggle for an existence, but that is not growth. A wheelbarrowful of coarse manure spread over the roots of a shrub in autumn or early winter, and then forked in the following spring, is a good investment.

Nasturtiums.—Comparatively few seem to know the value of the nasturtium as a bedding plant. We have a bed ten feet in diameter, in a sunny place on the lawn, which has ever refused to look decent, no matter what plants we put in it. This may in a measure have been due to a large maple at the north and a noble elm at the east of it—whose roots find there good feeding-ground. This year we have filled it with dwarf nasturtiums, and success is complete. The whole surface is covered with rich green foliage in various shades, and flowers of dark crimson, bright scarlet, maroon spotted, golden-yellow, and creamy-white colors, so blended as to give the bed an ever-changing appearance. There is another, a practical charm to be added, viz., its cheapness. Ten cents did it; a paper of mixed seed, planted half an inch deep and one foot apart each way, as soon as the soil is warm and inviting, is all the cultural instruction necessary for the most perfect success.

THE CORN-WORM OR BOLL-WORM.

GEORGE A. MARTIN.

The other day a gentleman from Newark, New Jersey, brought into the editorial rooms of the AMERICAN AGRICULTURIST a package containing several ears of green corn in the husk. "See here,' said he, as he opened the package, "I want to find out what those worms are. Out of two dozen ears bought in the market this morning, all but five were infested as you see these."

A glance showed that the "worms" in question were the larvæ of the *Heliothis armigera*, commonly known as corn-worm in the Prairie States, and boll-worm in the South. It is one of the most widely distributed of the predatory insects, being known not only in various parts of the Western world, from Southern Brazil to the forty-third degree of north latitude, but also within similar latitudes in nearly all parts of the eastern hemisphere, including the islands of the sea. The imago or perfect insect, of which views are given at A, Fig. 1, is one of the *Noctuidæ*—owlet or night-flying moths. The species is variable in size, being from an inch and a quarter in spread of wing to an inch and three quarters, and in color from light gray with olive green tinge to a tawny gray. The dark bands are always present on the wings, but vary in width. The moths fly at night and sometimes on cloudy days, feeding on the nectar of various flowers. The perfect insect emerges from the pupa-case after the season is warm and settled. This period varies with the latitude, from early May until July. The female deposits her eggs, one in a place, upon the herbage which is to form the food of the larvæ. At B are shown a side, top, and sectional view of an egg, magnified. Above is a group of natural size. The larva, when first hatched, is about one twentieth of an inch in length, and a mere thread in thickness; but it proceeds immediately to business—eating, growing, and moulting, until in a few days it has attained its fourth skin, and a length of something more than an inch. The color of the insect is as variable in its larval as in its perfect form, especially during its early stages of growth. They vary from light green or pink to dark brown, with all intermediate shades. The form and markings are plainly shown at C, Fig. 1. Soon after reaching its full size, the larva descends

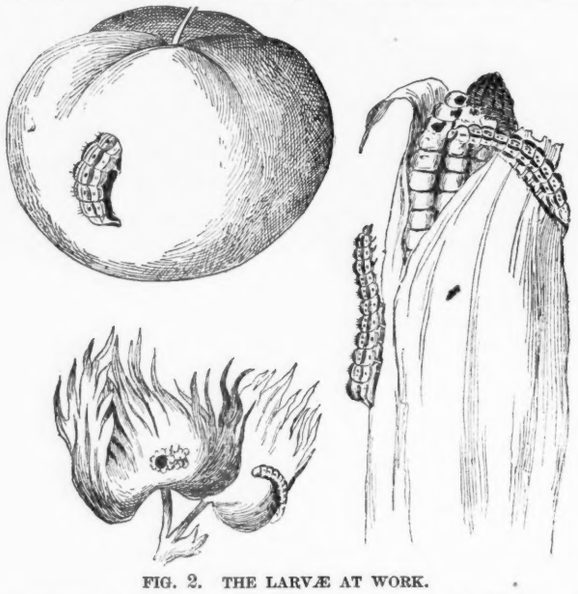


FIG. 2. THE LARVÆ AT WORK.

into the ground and assumes the pupa stage, seen at D, Fig. 1. Its cell is made of cemented earth, with a thin silken lining. It soon emerges as a perfect moth which lays a second brood; the eggs hatch, and the young undergo their transformations. The pupæ of the second brood hibernate in the ground and come forth the ensuing summer.

The larvæ are extremely voracious and almost indiscriminating in their food. They attack the young ears of corn, first eating the silk, then gnawing their way inside the husks and devouring the kernels. They attack the bolls of cotton before the buds have opened, and work utter destruction. Not content with preying

upon the two great staple crops of the North and the South, they batten on tomatoes, beans, peas, pumpkins, and other vegetable crops, as well as geraniums and other ornamental plants, not disdaining tobacco and stramonium. Fig. 2 shows them working on a tomato, an ear of corn, and cotton bolls. Nor are they strictly vegetarian, but will attack and devour the pupæ of other insects, and, on occasion, one another. Several instances are reported in which a box full of them was sent by mail; but when the box arrived at its destination a solitary tenant, like the survivor of the "Nancy Bell," represented the entire crew, having eaten the others.

TREATMENT.—This minute but not insignificant enemy must be held in check by prompt and energetic measures. The first step is to trap and destroy as many as possible of the moths before they lay their eggs. Pans, or other open vessels, filled with a mixture of molasses and beer or vinegar, set in the field at night, will attract and drown many of them. If the vessels are filled with clear water having a thin film of kerosene on the surface, and a lighted lantern is fastened immediately above, the light will draw many to their doom. The larvæ may be destroyed by spraying with kerosene emulsion, arsenical poisons, or pyrethrum. The latter, mixed in water, is preferable as protection for green corn, for obvious reasons.

THE FLOWERING RASPBERRY.

One of the prettiest and most showy native shrubs is the Flowering Raspberry (*Rubus odoratus*). It is found growing wild in rocky woods throughout the Northern and Middle States. Its flowers are about two inches in diameter, of a rich purplish crimson color, closely resembling in shape those of the wild rose. The bushes grow from three to five feet in height, compact in shape, and graceful in outline; they are covered with three or five-lobed leaves, quite different from the compound foliage of the common raspberry, as seen in our engraving. The branches, stalks, and calyx are bristly with glandular clammy hairs which exude a sticky secretion of a peculiar aromatic odor. Although the bushes bear broad and flat reddish fruit of good flavor, they are produced so sparingly as to be of no value for cultivation. For ornamental planting the flowering raspberry deserves as much attention as some of the most desirable foreign plants, and we are pleased to note that it has recently been planted in Central Park, with excellent results. One of the clumps growing there is shown in our illustration, and a flowering branch, reduced one-half of its natural size, is represented in the upper right corner of the engraving.

FLOWERING RASPBERRY BUSH AND BLOSSOM.

Vegetables for Autumn.—Beans for the table, as snap beans, may yet be planted, and they will come in ahead of the frost; and what pods are not wanted for the table make excellent pickles. From New York southward, in favorable situations, corn may yet be planted for table use. Plant the early varieties, in good, rich soil, where early potatoes were grown or in any vacant spot, and, in a majority of cases, a crop will be secured. A few rows of beets may yet be planted. If the beets do not get very large—but they may—the tops and small roots make a splendid dish served as spinach. Summer squashes often perfect their growth when the seed is planted early in August, and a delicious vegetable it is late in autumn. Radishes, too, may be sown any time this month and nearly the whole of next, and, if the weather is not too dry and hot, good radishes will be secured. Cucumbers can be had for the table and for pickles if planted early in the month. Spinach does nicely if sown any time during the month. Make garden in August.

SUCCESS WITH LILIES.

The most frequent cause of failure with lilies consists in overestimating their hardiness. To be successful, mulching must be employed. Last season our lily beds were mulched so thoroughly that frost would not have entered the ground deep enough to have injured the bulbs had the winter been severe. As it was no frost penetrated under the mulching, resulting in such a growth as we have never before seen anywhere. The *Lilium candidum* were a mass of green, the flower-spikes three feet high with from three to twelve buds each, without a spot on the leaves, or any other sign of disease, which has for the past ten years made sad work much earlier in the season than this. *Lilium Brownii*, one of the finest lilies grown, and one that usually refuses to grow, bears witness to the truth that lilies must be protected against frost to succeed. Bulbs that have been heavily mulched last autumn produced a glorious sight, their stalks stood fully four feet high, each with from one to four flowers of enormous size. Last year was favorable for the growth of this lily, plenty of rain, the result was plenty of offsets, which were so large that some of them bloom this year, the first instance of the kind we have ever known. This is a high-priced lily because its requirements are not known, and it is slow of propagation. But give it a light, deep soil, made rich, and protect against drought in summer by mulching, and against frost in winter by mulching, and it will increase very rapidly. What is true of these two species is true of all others.

August is the month to plant *Lilium candidum* in the open ground, and the only month that it can be done with success. This lily has two seasons of growth, autumn and spring, and they must not be interfered with. The autumn growth commences early in September, and not infrequently in August, hence the necessity of planting at this time. Failure in growing this lily mainly comes from planting at the wrong season. When clumps of lilies of any kind have to be divided, autumn is the best time for it, and the sooner the bulbs are planted again, after having been taken up, the greater will be the success.

HOUSEHOLD.

To be an Acceptable Visitor.

MARY W. EARLY.

In reference to paying a visit, my first piece of advice is, never pay one of indefinite length. If your hostess does not appoint the length of your visit, when she gives the invitation (as is becoming increasingly the custom), fix it yourself, informing your hostess of your decision before reaching her house, or immediately afterward, and do not swerve from your original intention except for weighty reasons. A weak vacillation in one's plans and movements never results in good. As a general thing two weeks are a sufficiently long visit to pay any one, except, perhaps, your nearest relations, but of course, no absolute rule can be laid down on this point; you will have to be guided by your own discretion. Having appointed a day to go, let nothing but some imperative cause prevent you from going at that time, especially if your friends have to send any distance to meet you.

Study the peculiarities of the household of which you become a temporary member as a visitor, and do not say or do anything to jar on these peculiarities, be they political, religious, social, or what not. Conform yourself strictly to the hours and general customs of the house in which you are visiting. It gives great trouble and annoyance to the hostess to have her guests late and irregular about coming to meals. If they are late to breakfast, they will probably derange her domestic regime for the rest of the day; so make it a point to rise in ample time to get ready for this meal. Again, let nothing tempt you to be late for dinner. No matter how much you may feel inclined to linger on the street, chatting with agreeable acquaintances, or inspecting charming arrays of dry goods, millinery or china, when the dinner hour approaches, turn your face promptly and resolutely homeward. A delay about dinner not only spoils the meal but greatly annoys the housekeeper, and I do not know of a surer way to debar yourself from a second invitation than to be unpunctual in coming to dinner.

Do not make engagements without consulting your hostess, especially if it be to go to some place where she will have to send you in a vehicle. Your plans and wishes might sometimes prove very discrepant with hers, and some serious *contretemps* might result by making engagements without letting her know. For instance, you might engage to go to the theater on the very night she had invited friends to spend the evening with you, if you failed to acquaint her with your engagements, or consult her about them.

When the friends of your hostess call on you, receive them with strict courtesy whether you admire them or not. This much is due to her as well as to them.

Try not to give unnecessary trouble to the servants. You can greatly lighten the trouble of the chambermaid by putting your things in place, hanging up your clothes in the wardrobe, or folding them away in the bureau drawers, putting your brush, comb and other little belongings in their proper places instead of leaving them strewn about. Some young girls are so thoughtless, not to say selfish, about such things that I have pitied the chambermaid who had to clean up after them when I have seen their clothes strewn around on all the chairs, and their toilet articles and ornaments all in a jumble.

When you see your hostess engrossed with something that necessarily distracts her attention from you, take a book and go quietly to reading, or take that opportunity to answer your letters. Do not let her feel that she has to be talking to you, or paying you some other attention all day long, but show her that you can very well occupy and entertain yourself when she has to be engaged with necessary household duties. As to helping her about any of her little domestic matters, you must use your tact and discretion to discover whether this would be acceptable or not. In some cases it would; in others, it would not, according to the circumstances and disposition of your hostess. Some women are naturally sensitive and ceremonious, and to such, the assistance of a guest, in their domestic concerns, would not be agreeable. If, however, your hostess keeps few servants, and seems disposed to accept willingly of your services you might lighten her trouble a good deal by assisting her about such little duties as filling the vases with fresh flowers, dusting the bric-a-brac, clearing the breakfast table, etc.

In visiting, as in other transactions of life, the right spirit to exercise is to think not altogether of the pleasure and benefit you are to receive, but also of what you can confer. For instance, if you are musical, let your host and hostess freely enjoy the pleasure and recreation of hearing you play and sing. At all events, you can entertain them with pleasant, cheerful conversation, and gratify them by the appreciative and responsive spirit in which you meet their efforts to contribute to your enjoyment.

For Books and Bric-a-brac.

NETTIE B. SMITH.

Occasionally one sees a parlor or sitting-room with a long side wall, unbroken by door or window. What can be done to break up that dreadful monotony of space? Such a room it was my fortune to occupy; so I set myself to devise something that should be useful and ornamental. I needed more room for books and bric-a-brac, and here was my opportunity to get it. So I took the dimensions of the space I wished the book-case to occupy, drew my "plans and specifications," and the carpenter carried them out under my directions.

The article is made of three-fourths inch dressed

DESIGN FOR BOOK-CASE.

pine lumber, is four feet six inches long, three feet ten inches high, and eleven inches deep, the top being one inch wider and two inches longer, to allow it to project over on the front and ends. The center space is fourteen and three-fourths by twelve and three-fourths inches. Between the mantel-top and the first shelf (which is hidden by the valance) eight and one-fourth inches; between that and the next, at the deepest part, ten and one-fourth inches; between that and the next shelf, nine and three-fourths inches; and from that one to the bottom board twelve and one-fourth inches; but under the central space to the bottom only nine and three-fourths inches. The top spaces, as will be seen, are divided over the center square. Of course the shelves are all let into the central square and the end pieces in a workmanlike manner, and the back finished with matched stuff, and casters fitted at the corners.

Now it is ready for ebonizing. This I did with a strong decoction made from logwood chips, applied hot and left to dry two or three times in succession. Afterward I gave it a wash of strong vinegar in which a handful of new nails had been standing for a week or more, and when it was thoroughly dry again gave it a good rubbing down with linseed oil and fine pumice stone, not sparing time or muscle, and it is as fine ebony as you could wish. If, however, this is too much trouble, it could be painted, which would do very nicely. Get a heavy wire bent at the hardware store to exactly fit under the edge of the mantel, and which is held in place by screw-hooks at the corners, back, and center of the front.

Now comes the question of drapery. If, like me, you are the owner of an old double broché shawl, your trouble is at an end. In the last generation mine had been a beauty, and the wrong side was still lovely in color and much handsomer than the raw-silk stuff for upholstering, which it much resembled. I first cut off my curtains the necessary length from the ends of the shawl. Then I took from the back side of each curtain a strip twelve inches wide for the valance around the mantel, and the strips that bordered the center of the shawl covered the mantel-board. This I tacked smoothly in place, and, after lining the valance with some heavy material to keep it smooth, nailed it close to the upper edge of the mantel, making it a little full at the corners, but holding it upside down, so that the tack heads are all covered when the valance is dropped. Hang the curtains to the rod with small brass rings, and finish the bottoms of both valance and curtains with small, fluffy tassels, of colors to harmonize, which you can get by the dozen, very reasonably, in the city, or you can make them of English crewel, and finish by untwisting and combing out the ends. Make them two inches long, and set about one and a half inches apart. Now if you are the proud possessor of a large mirror, especially if it is a square-cornered one and about as long as your book-case, and can have a narrow rack shelf above it for a few plates and tall jars, you will feel that you have achieved a grand success.

A Headache Room.

E. K. WINANS.

We moved into an old Dutch farm-house, which was everything that was desirable down stairs, but had a great many things undesirable up stairs. The bedrooms had slanting ceilings over half their space; the windows were set in where the stone wall gave place to wood, and were so high that one must stand by them in order to see anything besides the tree-tops. There was not a blind or a shutter at any of those windows, and the fresh whitewash came off the walls at the lightest touch. At first our time was mostly spent in brushing off each other. Gradually we learned to dodge those dangerous walls. I was having blinding, "all-day" headaches then, each week, and determined, since my room must be made over, that it should be a cool, dark Paradise for headache. But how to do it? Papering is dear; blinds probably cost a great deal, and I had spent all I could spare on the down-stairs regions. There was just half enough of a restful, darkish paper left over from the parlor—cream color on gray—and plenty of the border. Happy thought! Put on that paper as far up as the whitewash was bothersome; that was as high as my own head.

It was delightfully easy to do, and the effect was good. According to all rules, the walls should have seemed lower, divided so in half, but they did not. There was a vagueness about the upper walls and ceiling that looked airy and vast. For blinds I had curtains of thick dark matting inside the thin ones. They could be rolled up and fastened with leather straps when their pleasant shade was not needed. I made a chair, of which I was proud, on purpose for "sit-still," headache days. It consisted mainly of a high back, fastened on a kitchen chair with shortened legs, and was covered to match my big writing table. It was a great comfort, only it would tumble backward unless it stood against the wall. Luckily there was just the corner for it, under a small window, and it held one's head in exactly the right position. Under the large window I put a delightful box, as big as a little room, and carpeted it, and up there had my sewing-chair. It was as good as having a low window. There was room for a bit of a table and a chair for somebody else, though somebody else had to be careful lest she might fall backward over the verge. There was generally a somebody else who had grown tired of standing on tip-toe to look out of her own windows and so had come to my dais.

The bed in a headache room should be in the shadiest corner and have curtains around its head, or one can have a clothes-horse screen, to stand by the wash-stand in times of health and about the bed in days of misery.

Protection Against Ants.

NINETTA EAMES.

In warm climates, no pest is more troublesome to good housekeepers than the small species of red and black ants that infest their pantries and milk-houses. Various articles, such as flour of sulphur and potash, ground coffee, red pepper, camphor,

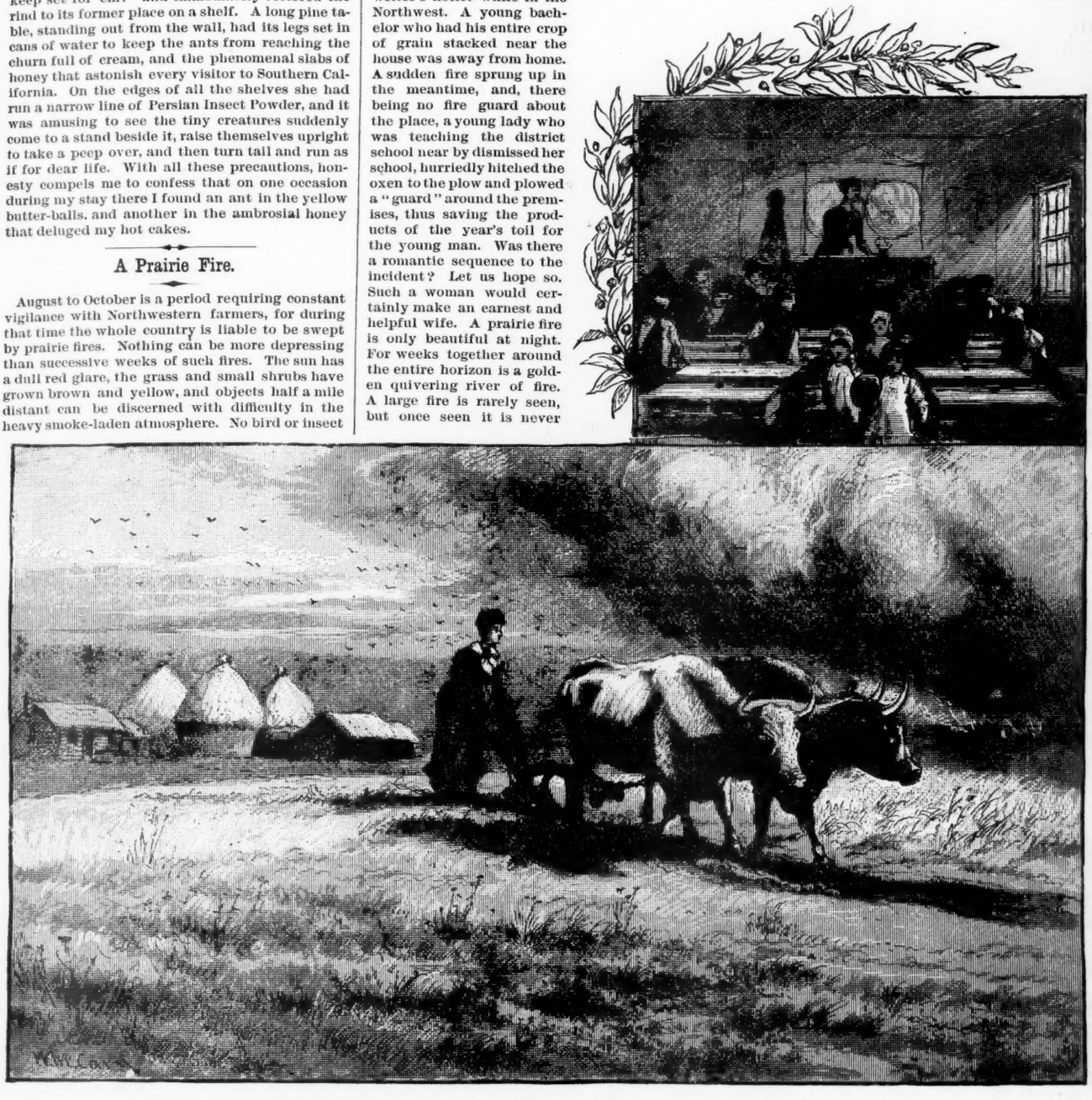
and the boughs of aromatic plants like the tomato, or, if you be a resident of California, eucalyptus and pepper trees, are all useful to scatter about the shelves and floors where these insects swarm. I remember once visiting a model housekeeper in Ventura, who showed me her "infallible remedies"—there was an unconscious irony in her use of the word in the plural—for ants. One was a rind of bacon on which myriads of black ants ran hither and thither. This the lady shook over the fire with the words, "You see the sort of trap I keep set for 'em!" and immediately restored the rind to its former place on a shelf. A long pine table, standing out from the wall, had its legs set in cans of water to keep the ants from reaching the churn full of cream, and the phenomenal slabs of honey that astonish every visitor to Southern California. On the edges of all the shelves she had run a narrow line of Persian Insect Powder, and it was amusing to see the tiny creatures suddenly come to a stand beside it, raise themselves upright to take a peep over, and then turn tail and run as if for dear life. With all these precautions, honesty compels me to confess that on one occasion during my stay there I found an ant in the yellow butter-balls, and another in the ambrosial honey that deluged my hot cakes.

A Prairie Fire.

August to October is a period requiring constant vigilance with Northwestern farmers, for during that time the whole country is liable to be swept by prairie fires. Nothing can be more depressing than successive weeks of such fires. The sun has a dull red glare, the grass and small shrubs have grown brown and yellow, and objects half a mile distant can be discerned with difficulty in the heavy smoke-laden atmosphere. No bird or insect is heard; an unnatural quiet reigns, and everything conspires to make one think the judgment day is at hand. The fires are generally started by Indians, half-breeds and hunters' camp fires, or by sparks from some passing engine. It is never safe to leave home for any length of time during this season.

The buildings on a farm are generally small, but so numerous as to look like a small village at a distance. Instead of building large barns as in the East, the prosperous farmer adds another shed to his group. They are protected by plowing a strip about three feet wide, called a "fire guard," around the entire group; with grain and buildings thus secured, and with proper attention, there is little danger of the fire crossing the "guard." The usual way of "fighting a fire" is to beat or trample it out with bunches of twigs tied together, brooms, shovels, etc., the whole family usually taking part in the performance, and a very exciting time it is. If one farmer is likely to have more than he can attend to, three or four of his neighbors will go to his assistance, sometimes spending the whole night at work.

A rather amusing circumstance came to the writer's notice while in the Northwest. A young bachelor who had his entire crop of grain stacked near the house was away from home. A sudden fire sprung up in the meantime, and, there being no fire guard about the place, a young lady who was teaching the district school near by dismissed her school, hurriedly hitched the oxen to the plow and plowed a "guard" around the premises, thus saving the products of the year's toil for the young man. Was there a romantic sequence to the incident? Let us hope so. Such a woman would certainly make an earnest and helpful wife. A prairie fire is only beautiful at night. For weeks together around the entire horizon is a golden quivering river of fire. A large fire is rarely seen, but once seen it is never forgotten. It was the fortune of the writer to witness one of the grandest prairie fires ever seen in the Northwest. The country was covered with large hay swamps and a thick growth of underbrush. A spark from a settler's dwelling or a hunter's camp-fire started a blaze. It was easy to appreciate the feelings of the fire-worshiper as one gazed on that glorious scene. The country far and wide was a roaring sea of flames. No pen can paint it, no tongue describe it. It was a spectacle for the universe. Crushed at the stupendousness of the awful sight, oblivious of time or danger, conscious of nothing but a world on fire, the awed spectator could only bow before it.



A WESTERN SCHOOL-MISTRESS'S BRAVE DEED.

A Sharp Rap at the Cooks.

DR. A. S. HEATH.

There is no branch of human industry requiring more art and science than the proper preparation of human food, and yet there is no domestic art so badly performed. Nine-tenths of the cookery in our country is an abomination—a high-handed crime against the unfortunate human stomach. There is no reason why we should not cook food intelligently and properly. Even the rude cookery of foods and fodders for our live-stock is physiologically better done than the preparation of food for human consumption. In our simple cooking for animals we leave the water in which their foods are cooked in them. In this way we supply or rather retain the constituents that nature put in them, and designed for growth and health, for the more ready digestion and assimilation of the elements of the foods consumed; whereas, in boiling most vegetables for human food, we throw away the water in which they are cooked, and dissolved in this water we also throw away the salts which the animal system demands. There is

one ingredient that should be put into every article cooked, and that is exactitude. Many otherwise delicious dishes are spoiled by hit-or-miss, and by lack of thorough manipulation. Cook-books should be to the genius of the kitchen what pharmacy is to the druggist—a directory how to combine and properly prepare food substances for human use. As it requires a well-versed lawyer to form a digest of laws and a skillful doctor to diagnose obscure disease, so does it require the aid of a true chemist to expunge the harmful nonsense and remove the dangerous crudeness from the cook-book.

Crocheted Wheels With Many Uses.

FRANCES H. PERRY.

The pretty crocheted wheel shown in Fig. 1 may be used in several ways. Different effects are produced by uniting the wheels differently, as will be seen by a glance at the accompanying sketches; but, whether arranged in rows, triangles, or circles, the spokes unite in such a way that a continuous pattern may be traced throughout the work, notwithstanding the wheels are plainly discernible. The pattern is equally effective in large wheels made of macramé or coarse linen cord, for household adornment, in the smaller silk wheels (imitating passementerie) for dress trimming or fancy work, and in the firm, delicate work in fine linen or madonna cotton for collars or lace edging.

To make a single wheel, begin with a chain of ten stitches; join to form a ring.

First row: Chain one, eighteen trebles under ring, one single crochet in top of first treble.

For first spoke: Chain sixteen, one treble in fourteenth stitch, one treble in every stitch of chain, taking up only one thread—making fifteen trebles

FIG. 1. SINGLE CROCHETED WHEEL.

in all—one double crochet in next treble in ring, turn; one double crochet in every treble to end of spoke, chain one, turn; *one double crochet in each of first three double crochet, a picot (chain four, one double crochet in first of the four chain), repeat from star three times, one double crochet in each of the last four double crochet, one double crochet in each of next two trebles in ring.

Second spoke: Chain fourteen, drop stitch, needle through second picot from center, take up dropped stitch, over, draw through both, chain two, one treble in top of picot, and one treble in each stitch of chain (fifteen trebles), one double crochet in next treble in ring, turn; work the rest of the spoke as the remainder of the first spoke was worked. When working the sixth spoke, join the third picot to the outer point of the first spoke. When the wheel is completed, secure both ends of the material neatly with a needle.

The wheels are often joined by crocheting them together, by matching the end of a spoke in a finished wheel to the end of one that is being crocheted; but it is always as well to sew them together, and sometimes it is much better; for then one can change the arrangement. For instance, colored silk or linen wheels that have served the purpose of dress trimming for a season may be taken apart and rearranged in many ways for fancy work—in rows, to unite with ribbon in a tidy or lambrequin, for cushion covers, fringe heading, etc.

Fig. 2 shows nineteen of these wheels, made of linen cord in its natural color, united to form a cover for a piano or organ stool. The wheels are joined by the spokes in the order shown in the engraving, and a thick tassel of the cord is tied into every picot around the outside edge. This makes a very pretty cover or tidy for a good stool, as it is strong and protective. For one badly faded or worn it should be lined with plain satin or nice satine; golden yellow or a rich deep red is very handsome with the linen color, but any shade may be used that will harmonize with the surrounding furnishings. No matter how badly frayed or faded the cushion may be, a cover of this kind thrown over it, and secured invisibly at several places near the edge of the stool with tidy- or safety-pins, will freshen it wonderfully, giving it the appearance of a nice new stool, protected by a linen cover.

FIG. 2. PIANO-STOOL COVER.

Fig. 3 represents a handsome collar, shaped to imitate the Vandyke-point lace, which is so becoming for neck and wrist wear. The collar which served as a model for the sketch was made of fine, cream-white, spool linen, crocheted closely and evenly. After the wheels were sewed together, as shown, a straight edge was crocheted all around the neck thus:

First row: Carry a chain all along the edge, working one double crochet into each of the upper picots, one treble into the end of each spoke, and long trebles into the picots down between the wheels, making three or five chain between each double crochet or treble as may be necessary to keep the edge straight and even; at the corners work two or three long trebles, with three chain between each, into the same picot, to make them square; when done, turn.

Second row: Work four double crochet over every three chain, and six double crochet over every five chain, till the chain is covered, turn.

Third row: One double crochet in every double crochet of this row (take up one thread only) with a picot after every third stitch.

The border may be carried around the points as well as the neck, if desired, the work being the same except that it is necessary to work several long "trebles" (two of them extra long) at the extremity of each point, to give the pointed outline required with a straight edge. Wristbands to match complete the set. Knitting silk, either black, cream, or colored, makes very pretty trimming for silk or wool dresses, and colored linen or cotton is pretty for summer wash dresses for women or children. Vests, shoulder points, etc., may be fashioned from these wheels; so also may handsome passementerie fringe, using common embroidery silk if it is for a nice garment. A neat worker will find this very satisfactory and much cheaper than manufactured fringe of the same quality; but those not experienced in nice crochet work might not be pleased with their fringe, as a little careless work would spoil it.

A piece of silk fringe for sash ends or draperies is shown in Fig. 4, which, after the foregoing, calls for no further description. It will be seen that the knotted tassels of the fringe form a broken outline

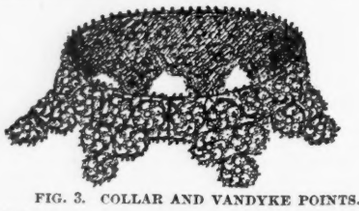


FIG. 3. COLLAR AND VANDYKE POINTS.

at the bottom; they are sometimes preferred of even length. Made of suitable material, this fringe is pretty for lambrequins, or the ends of table or bureau scarfs; and pretty fringe for a bedspread may be made of knitting cotton.

A New Use for Potatoes.

Dr. Salzer, an English medical expert, states that the best way to remove foreign bodies from the stomach is by means of potatoes, which, when eaten in large quantities, proportionately dilate the whole intestinal canal, so that the foreign body is enveloped and can not cling to any part during its passage. Of the many interesting experiments he has made to prove his theory, one is the removal of a weight of five and one-half drams which had been swallowed by a child, and another of a set of artificial teeth.

Teaching and Training.

LAURA E. LYMAN.

It is a short and easy process to teach our children right principles of action. But to train them into the habit of acting from those principles is a matter of months and years, and involves exhaustless patience and will power on their part no less than on ours. Not until it is easier for them to do the right way than to do the wrong way is our teaching perfectly successful. That time may not come until "they are old"; then we are assured they will not depart from the way in which they have been trained.

"Why do you tell that child the same thing twenty times over?" said John Wesley's father to his mother as she was teaching her little brood in the home school at Epworth. "Because, my dear," replied the wise woman, "nineteen times are not enough." The motto of all training schools and of every family should be, "Line upon line, line upon line; precept upon precept, precept upon precept; here a little and there a little." The student of arithmetic, after having thoroughly mastered the "rule," must work out all the examples under it before he becomes trained in the rule and familiar with its various applications. The pupil in music may go over and learn in half an hour what it will take him days and weeks to become proficient in. Not only must his fingers be trained to execute, but his mind must act automatically before he can "play" perfectly the difficult exercise. It is curious that this term "play" is used for the execution of difficult instru-

FIG. 4. PASSEMENTERIE FRINGE.

mental music—an exercise involving the doing of so many dexterous things perfectly, and all at the same instant of time. We apply the same term to the accomplished orator who "plays" with his subject and on his audience; also, to the rhetorician who "plays" with words. But neither the musician, nor the orator, nor the rhetorician, acquires the power to play with his subject without long, laborious, continuous, severe training.

Life is one long training school in which we become habituated to do and endure, to labor and to wait, to suffer and to enjoy. Our children weary of parental discipline and restraint, and long for the time when as men and women they can be free to do as they please; and we, weary of the far graver, sterner and more unrelenting tasks to which are subjected those "out on the ocean sailing," exposed to all the storms that sweep over it, and all the currents that traverse it, often long for the quiet haven, the peaceful harbor, whither our prows, with what toil! are continually bent. We can see that obedience, submission, docility and patience are best for them until the day of majority comes, and by parallel we may see, too, that these virtues are best for us also until our minority shall expire and it shall fully "appear what we shall be."

Personal Tidiness.

ELLA ROCKWOOD.

Are all housekeepers sufficiently careful to be dressed neatly in the morning? A clean print or gingham dress, with a snowy collar or a bit of lace around the throat; the hair neatly combed before leaving one's room; the teeth kept white, and the nails well cleaned and trimmed—all these are trifles in themselves, yet combined they form a toilet in which no farmer's wife need feel ashamed to entertain a morning caller. They cost nothing, and the result is far more than gratifying. Imagine sitting down at the family table with tumbled locks, untidy gown, from which half

the buttons are gone, their place being supplied with pins, with perhaps a rent or two at the seams. The picture is not inviting and will soon have its effect upon the other members of the family. If mother does not "fix up," the children will have no incentive to do so. The husband will soon become careless in his dress, and even the hired men will not be so careful about keeping themselves tidy.

It takes but a moment's time to bathe the flushed face and brush the hair before sitting down to dinner, yet it gives one a much more comfortable feeling after the fatigue of preparing a meal in the middle of a hot day, and the enjoyment is heightened as husband, with an approving glance, notices your smiling face.

When the dinner work is out of the way, do not sit down until you have changed your dress, if no more than to put on another print, with a clean collar; and, if necessary, slip on another pair of shoes and rearrange the hair. Then, with a clean white apron, you are ready for sewing, mending, or whatever needs doing, and will be spared any mortification should callers drop in.

A Cabinet Index-Rerum.

WEBB DONNELL.

Scrap-books are useful, but only in a limited way; if one has many clippings to preserve, he soon finds them objectionable. An article may be partly on one side of the clipping and partly on the other. Then, if the clippings are numerous, the work of pasting them takes altogether too many books and too much time, and, when all this is done, they are not in the most convenient form for ready reference. A much better way is to have a cabinet for this purpose, with a drawer for clippings to be placed, miscellaneously, whenever they are cut out. When quite a number have accumulated, proceed to classify them.

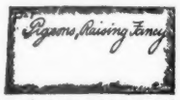


FIG. 1. CLASSIFICATION.

Get a quantity of plain envelopes and seal them, and then cut open one end. Let all clippings on the same general subject be placed in one envelope, and this envelope put into the compartment of the cabinet whose letter is the same as that of the chief word in the subject. Mark this letter on the left-hand corner of the envelope, so that it may always be returned to the right compartment. The subject of which the clipping treats should be written lengthwise across the top of the envelope. If, for instance, the article treats upon "Raising Fancy Pigeons," this title will be written across the top of the envelope; also the letter P in the left-hand corner, and the envelope placed in compart-P of the cabinet, as shown in Fig. 1. If there are more cuttings upon any subject than one envelope will handily hold, use two or more as needed. When more than one envelope is used, let the initial letter in the left-hand corner be followed by a numeral—1 for the first envelope filled, 2 for the second, and so on. Thus, if one were interested in pigeons, and had collected a good many cuttings relating to them, the first envelope would have in the left-hand corner P—1, the second P—2, and so on. This would show at a glance, if one were looking for an article on this subject, that there were other envelopes also in which to prosecute his search.

FIG. 2. EXTERIOR OF CABINET.

The cabinet which is to hold the envelopes may be made in any form the fancy of the maker may suggest. Besides the drawer in which to place scraps as they are cut from the papers, it should also have drawers divided into compartments for each letter of the alphabet, some of which should be wider than others, since more subjects would fall under the head of S, for instance, than of Z. It will be well to have the partitions between the compartments inserted in such a way that they can be moved if necessary. Each drawer should be of sufficient depth to allow the envelopes to stand upright on their sides.

A very satisfactory cabinet may be made as shown in Fig. 2. It will be seen that there are three drawers for cuttings, the lower one shown at the back of Fig. 3 being wider than the other two, one of which is seen in front. The extra space thus afforded is to be used for packages of envelopes yet unused, scissors, mucilage, and other conveniences. The two small doors at the top open into small closets, one or both of which can be used for storing clippings until they are classified. The cabinet may be of any size desired, but a size that will permit it to be placed upon a table or stand will be found most convenient. The following dimensions are given as a suggestion merely: Width of base, fourteen inches; width at position of upper drawer, ten inches; height of cabinet, twenty inches; length, twenty-four inches. A brass rail about the top makes an attractive finish.

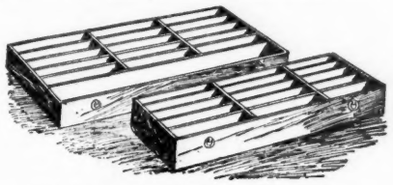


FIG. 3. COMPARTMENTS OF DRAWERS.

The Proper Care of Telescopes.

W. E. PARTRIDGE.

Many of the readers of the AMERICAN AGRICULTURIST have recently become the owners of good telescopes, and, as few persons know how to take care of a good optical instrument, some hints in regard to the treasure they have in the AMERICAN AGRICULTURIST telescope will perhaps be welcome.

The maker, to prevent tarnishing, covers all the deep yellow parts of the instrument with lacquer, a kind of varnish. Care should therefore be taken not to scratch this varnish, as the bare brass tarnishes quite easily. This is important only for appearance. But, whatever happens, do not use polishing or cleansing powder on any part of the instrument; better let all the brass grow as black as your hat. The draw-tubes, which show a lighter yellow, are not lacquered. They may be wiped with a clean cloth, but do not need attention, as they will keep themselves in good condition for a lifetime if not subjected to violence. If they tarnish with time, it is of no consequence; indeed, tarnish will not harm the instrument in any way. For the sake of preserving the polish and appearance of the leather and brass work, and for the better exclusion of dust, it is well to make a snug-fitting bag to hold it. This will just fit into the case, and prevent rattling or rubbing. The bag may be of soft cloth, canton flannel, or wash-leather. Handle gently; for the tubes, in order to be light, can not be made very thick, and if they become dented they do not work easily, and perhaps will not work at all. If the glass is owned in a house where it is frequently wanted for use, a long, narrow box may be made to hold it drawn open. The box should have a tight cover, and be lined inside with canton flannel.

The lenses are the essential features, and these usually get the worst treatment of all. They are wiped, and rubbed, and taken out, and returned until the instrument is spoiled. Remember that a good instrument like this will last in perfect condition for a lifetime, and yet may be spoiled by ten minutes' over-zealous cleaning. The first rule is, never touch the glasses with the fingers. The second rule is, never touch the glasses with anything if it can possibly be avoided. If one has not a piece of clean, soft wash-leather, kept for the special purpose, and in a place where no dust can get upon it, or a piece of the softest silk or cambric, also kept for the purpose, then do not touch either of the glasses. If either the front glass (the objective) or the small one (the eye-glass) has dust upon it (dust which can be seen by looking at the glass), then it is allowable to use the soft leather or cloth. Wipe the dust off as gently as you would wipe a speck of dust from the eyeball.

As to the inside lenses, let them alone. First because the threads of the screws are fine, and the threads do not readily catch. As the screws are new and have the tool marks upon them it is difficult to feel or see if a thread "rides" over another. If this happens, not only is the mechanical part of the instrument somewhat injured, but the optical performance is harmed by making the lens slightly one-sided. Then, upon opening a glass of this kind, one is pretty sure to make some portions of the blacking fall or chip off. These grains are sure to fall upon the glasses, and then, on putting the parts together, they have to come apart again to be wiped.

The glass used for lenses, spectacles, telescopes, etc., is very soft. If there is light dust or a dust speck on the outside of a glass, a soft, clean feather can often be used to brush it off. This does do damage whatever. Keep the lenses away from the wet. Water is bad for them, and the necessary wiping to remove it is bad, as we have seen. When not in use, keep the cap on and the slide closed, or else keep the instrument in the box I have mentioned. The light is not especially good for the glass, which in years of time will grow yellow under its influence.

These may seem rather formidable directions, but after they are once understood they are easily followed. The instrument which is giving so much pleasure now will be doing just as good work twenty-five or thirty years hence if it is meanwhile properly cared for.

Rest a Little.

CE DORA LIEUELLEN.

Good mother, maker of numerous pies, mender of manifold hose, overseer of a province,—rest a little. Have a chair by the stove, and when you peep into the oven, sit while you look, yea, even a moment after. You will work all the faster for the short change of posture. While mending, have your chair in the coziest corner, where good light will come in, if possible over your left shoulder. Drop your hands occasionally and let your eyes rest, by looking at something interesting out of doors; thus many a holy thought will enter the chamber of your mind and abide with you. Don't rule all the time. Drop the reins of government for only a little while and be a child with your children. These moments of sympathy with their delights will be remembered gratefully, longer than your severe disciplinings, and when commands are necessary, as they often are, they will be the more potential because occasional.

Rest a little, and gather restful things about you, that you may rest. Every woman should have a cot and an easy chair in her working room; if this is every room in the house, then every room should have these resting appurtenances. I have known houses where there were several unmade dress-patterns folded away in the drawers, bought because they were bargains, regardless of need or fitness. Yet these same houses had not an easy chair to rest the body, a book to entertain the mind, nor a convenience to lighten labor. Nor had the inmates a kindly thought or word for each other, let alone the world outside. Can God bless such homes with children? He does do it. Yet such surroundings transform the holiest blessings sometimes into what seem curses of unspeakable bitterness. These parents reap but what they have sown. Let home bring rest to each member of the family, and let it be the care of each that mother rests a little.

Daisy Designs for Embroidery.

DOROTHY PHILLIPS.

I think you will agree with me that the daisy mats illustrated herewith are novel, pretty, and cheap when I tell you how to make them. The materials required are three-quarters of a yard of white spotted muslin, the same of pale blue sateen or China silk, and some white and yellow washing silks. Select muslin with a single round spot, about the size of a five-cent piece, then take your white

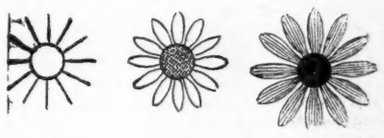


FIG 1. FIG. 2. FIG. 3.

floss and divide each spot like Fig. 1; next, make a stroke each side like Fig. 2, so forming the petals. Now make the centers of the yellow floss. Line with the blue and edge with lace.

Pretty pillow-shams are made to match the mats, but the spots should be the size of a twenty-five cent piece. On these the petals might be outlined. Edge with lace, and line with pale blue sateen or lining cotton,

A new idea for a piano scarf is to make the foundation of very fine ecru cheese cloth. About two inches from each end place a band of ecru spotted muslin, which has been worked like the mats, only substituting yellow daisies with brown centers, as seen in Fig. 3. Finish the ends with coins or ball fringe.

Late Fashion Notes.

As summer is the favorite season for traveling, a few hints as to travelers' raiment are now apropos. The favored materials for traveling dresses are small checked Cheviots and homespuns, or else the plain gray, blue, or brown serges which are always in vogue. The first named are made into tailor-gowns, with a habit-bodice, either double or single breasted, buttoned to the throat, or else opening over a linen chemisette and worn with a four-in-hand scarf. Two rows of round crocheted buttons or flat "lasting" ones adorn the front of the waist and extend down the center of the five-inch tabs at the back. A small handkerchief-pocket is set far up on the left side. The sleeves are coat-shape, large and high on the shoulders. The "habit-skirt" is much the same as the English skirt described last winter, with most of the fullness massed in the back, and the front given only a slight "movement" by small plaits taken on the sides at the top. The bottom is finished by a four-inch hem and two rows of white stitching. The serge traveling suits have the same kind of skirt, but the bodice is a jacket, tight-fitting in the back and loose in front, where it opens over a blouse of wash-silk or fine percale, being kept in place by one or two straps that fasten with smoked pearl buttons below a short revers collar. This last style is particularly convenient, as the blouse and skirt form a complete costume for warm days, while the jacket is readily donned when there is a fall in temperature. This is also an excellent pattern for a tennis, boating, or general "outing" dress.

A round turban or close toque of dark straw is the best traveling hat, and should be very simply trimmed with ribbon loops or rosettes, a standing wing or bunch of modest flowers. Even on the water a small hat and veil is a better protection from the sun than a large flat, while it is far pleasanter in case of wind and rain.

It is rather strange that red dresses should always be so popular in hot weather, but so it generally appears, and the bright costumes, certainly, give an effective touch of color to many a picturesque, rural scene. This summer is no exception to the rule, and we have scarlet gowns to satiety, scarlet sailor hats, occasionally the hideous scarlet veils, and no end of scarlet parasols of plain, heavy silk with natural wood handles. And here let us note that the silver handle has had its day. Simple rustic sticks or else a gorgeous affair set with jewels are the extremes upon which, only, Dame Fashion deigns an approving smile. For the seaside and mountains, however, the cheap but unique Japanese parasol has been revived once more and adorned with a huge bow of black ribbon it really looks very well with a cotton frock. Think not, however, that there is no sunshade suitable for the quiet, conservative woman! Why, they are of every size, shade, and price known to the manufacturer. Black and plain colors of course are fashionable, plaids even more so; and changeable satins showing two colors a rather pretty novelty. They come both trimmed and untrimmed. Some display only a bow of ribbon on top, others are fringed, ruffled, or adorned with lace, while very elegant ones are entirely covered with silk-netting or plaited crêpe. In place of a sharp, ferrule point the newest parasols carry an ivory button or a soft fluffy rosette of lace and ribbon. The handles, as mentioned above, are of natural wood—oak, cherry, Madagascar, bamboo, tulip, acacia or box,—and those with knobs and bulbs are most admired, while some even retain the bark to give a more rustic appearance. These handles, however, often serve a double purpose and conceal in their tops a little receptacle for change, a *bonbonniere*, a pencil, a vinaigrette, or a tiny powder-box.

A new fabric for light, summery-looking gowns is crinkled cotton, which somewhat resembles the very stylish and more expensive crêpes and *mousseline chiffons*. It is soft, silky, semi-transparent, and is striped with thicker threads at intervals. It is lovely in pure white or dotted with pastilles of color. Made up over silk and trimmed with lace and ribbon, it makes a charmingly youthful costume, suitable for any dressy occasion. Heavier white wool dresses are much decorated with gold galloon, braid and pipings.

Midsummer corsages are often cut quite low, both in the back and front, but except for full dress should never be worn without a muslin chemisette placed inside. A new and convenient little French wrap is a sleeveless jacket with a cape. It will be appreciated by those who have encountered the difficulty of forcing full, high-shouldered dress-sleeves into sacque-sleeves.

Sailor hats are more popular than ever. White straws are about given over to children and very young girls, ladies preferring black Neapolitans and colored straws. These often have a lattice-work crown or a light, open brim, while their appropriate trimmings are gauze ribbons, gossamer lace, butterflies and dainty filigree pins. When feathers are used they are very small, and are arranged like a wreath about the crown and brim. Simple hats for country wear are decorated with wild blossoms and weeds that are exact imitations of Nature. Flower bonnets were too unserviceable to have a long reign, and are now replaced by the "trellis bonnet," made of open, coarsely woven, fancy straw. Leaves are twined through this lattice-work, to look as though growing there; two daintily-colored butterflies are poised in front, and narrow velvet strings come from the sides, and tie beneath the chin.

Ladies in mourning still select Henrietta cloth for their best gowns, as it is material suited to all seasons, can at first be trimmed with crape, and later lightened by dull silk, dead jet, or passementerie. For second best, nothing is nicer than tamise cloth or batiste, and for warm weather nun's-veiling and wool crépons. Iron grenadine is also once more in favor, and elderly ladies not only make dresses of it but large shawls as well. In cotton fabrics, gray- or black-and-white ginghams are most appropriate for mourning frocks, while it is quite correct to also wear the plain white lawns and nainsooks that come hemstitched along one selvage. Shoulder capes of English crape, lined with silk, or of crape and bengaline combined, are rich and suitable. Deep mourning bonnets are trimmed only with the veil; but these veils are shorter than formerly, being only a yard and a quarter in length. Nun's-veiling has almost taken the place of the unhealthy crape veils, and still lighter is a new silk veiling resembling *mousseline de soié*, with very wide selvages. When the veil is laid aside, toques and capotes of chip, lace straw, or Neapolitan are worn, and these are garnished with twists of black *crêpe de chine* and gros-grain ribbon. A few black flowers and ornaments of dull jet, too, are not objectionable. For second mourning, gray and lavender dresses are more fashionable than black and white.

A Garden the Year Round.

D. WEBB.

While nothing can take the place of fresh vegetables and fruits, with the fragrance of the garden still upon them, yet it is possible to have a supply which, if not altogether so choice as that which comes in the "season," is still wonderfully good and useful the year round. Canned fruits have long been used, and canned vegetables to some extent. The curious thing is that air-tight preservation of green things has not been carried further, and practiced more universally. The canning factories make use of green corn, beans, peas, tomatoes and other green stuff. The same use can readily be made of them in the family, a sufficient quantity being put up while these articles are in their prime to last till the garden produces its next crop. To make as little labor of the matter as possible, let a large supply be prepared at one time. Tomatoes, for instance, canned in large quantities, will give many delightful dishes, both heated alone and in soups and croquets.

Many have a prejudice against canned articles of any kind. This may be well founded as regards some sorts that are placed on the market, but such a feeling in the case of that prepared at home can only come from an experience with fruit or vegetables which have "kept" poorly, or at least have lost their originally fresh taste. I suspect that much of the trouble is just here: Either the articles have not been rightly prepared, or the vessels in which they are contained are not perfectly air-tight.

From an experience of the past two seasons I have found that berries of nearly all sorts give the greatest satisfaction in the matter of freshness and naturalness of taste when put up in the ordinary glass jars and sweetened but one tablespoonful to the quart. It is especially important that as the jar cools the top be screwed still further on. It will surprise many, who have not paid attention to this, to find how many times the process may be repeated at intervals of half an hour or so. The explanation, of course, is that the glass continues to contract as it cools, and it does not become entirely cool for several hours after the hot berries are placed in it. A final tightening of the cover may take place on the following morning, when the jars should be set away in a cool, dark place. Where less attention is paid to secure an air-tight receptacle, a larger quantity of sugar will undoubtedly assist in preserving the fruit, but it will be at the expense of the natural flavor of the berries.

Hot Weather Recipes.

Fried Tomatoes.—There is no nicer dish for a hot weather breakfast, lunch, or supper than a dish of fried tomatoes. Choose large, firm, and not over-ripe tomatoes and slice about half an inch thick. Fry in hot fat after first rolling in flour and seasoning. Have no more fat in the pan than is just necessary to fry them. Brown on both sides without burning; cover gently with hot milk, add butter, and as soon as the milk bubbles thicken slightly with flour wet with cold milk. The sauce must be perfectly smooth. Pour over toast. You may remove the slices of tomatoes to a dish containing hot buttered toast and make the sauce in the pan afterward, if you prefer.

Baked Tomatoes with Rice.—The Carolina style of serving baked tomatoes will furnish a hearty dinner for a farmer's family when meat is not easily obtainable. We would all be healthier if less meat were eaten in very hot weather, and vegetables and cereals were more largely indulged in. Take large, sound, ripe tomatoes. Cut a piece off the top about an inch in circumference and with a small spoon take out the seeds and water, leaving in the pulp. Meantime have a pint of rice cooking in a quart of boiling broth which you may have made from the bones of any roast; season with salt and the half of a green pepper cut very fine; cook for fifteen minutes, when the broth will have been absorbed; drop in two ounces of butter and draw to the back of the range for ten minutes; then fill the tomatoes, put on the covers, put a little butter over each and bake for half an hour.

Hash Salad.—The real hot weather dish is the salad. It may be made, as a witty young authoress used to say, of "anything except old clothes." There is no vegetable, meat, or fish when cooked and cold that will not, either alone or combined with other ingredients, form an agreeable salad. Few larders do not contain the elements for this addition to a meal left from the preceding meal or meals. Cooked red beets, cold potatoes, raw tomatoes and raw cucumbers in equal parts cut in dice, mixed with a cream or oil dressing and placed around the heart of a fine lettuce is one of the nicest of combination salads, the real name of which is *Salad à la Dumas.*

Strawberry Pie.—The best strawberry pie is the old-fashioned one. Line a deep pie dish with paste; cover with a layer of fruit (if it was necessary to wash them drain very dry before using). Sprinkle thickly with sugar, dredge lightly with flour, and so continue until the dish is full. Cover with a layer of paste and pinch around the edges; prick holes in with a fork and bake. This may be eaten hot or cold with cream or without. A more fanciful dessert of strawberries is made as follows: Make a plain sponge cake and bake on buttered tins, dropping the cakes about the size of a small tea plate. While hot fold them into a cornucopia and fasten together with a small wooden skewer: a toothpick will do. When cold remove the skewer, fill with strawberries and serve with powdered sugar and cream, or with whipped cream.

BOYS & GIRLS

Among the Blackberry Snakes.

ISABEL GORDON.

I had come to my home in Virginia to spend the summer vacation in hard study that I might creditably meet my examinations, for I was then nineteen and had taught during the past year in a district school, but aspired to fill a higher position in the city. We lived about two miles from town on a tiny patch of land too small to be called a farm, yet large enough to keep us all busy. My father had died three years before, and now there were four of us, mother, myself, Will, aged seventeen, and little Greta, who was ten. It was not very easy those days. We all had to work hard to keep a roof above our heads, and mother worked harder than any of us. She was proud, independent, and strict,—sometimes too strict, I used to think, although the best mother that ever lived.

The morning I want to tell you about was early in August. It had rained all night, and about eight o'clock cleared up hot and muggy,—one of those drowsy days when it tires one to stir. I was sitting by the open window in my little attic room working on a French translation which every minute seemed to grow harder and more obscure. I think I was almost dreaming off to sleep when the door opened and little Greta rushed in, her face pale and frightened, and her eyes red from crying.

"O Katharine, mother says I've got to go down to the blackberry patch and fill the six-quart pail with berries for pies! She says I've got to go, and I've been there and peeped all around, and the blackberry snakes are hanging on to the vines thicker than bumblebees. I daren't go. I don't care if I do disobey mother. Those snakes scare me to death, almost. Mother says they don't bite. I don't care if they don't. I can't go! O Katharine, what shall I do?" and the poor little lass tumbled on the floor in a dolorous heap, crying as if her heart would break. The most pitiful little figure she looked, with a limp pink sunbonnet hanging down over her eyes.

I felt sorry enough for her. I knew if mother said she had to go, go she must, snakes or no, and Greta knew that as well as I. "Where is Will?" I asked. "Why can't he go?"

"He can't," she sobbed. "Mother wants him now to harness up and go to town after sugar and things. I said I would walk there and back for them if Will would pick the berries, but she said I'd got to go and learn to quit bein' scared of snakes. O Katharine, I can't go even if mother should lick me. Who knows, they might crawl round my legs, and then I'd die screaming, I know I should." She had scrambled up on the edge of my bed, and there she sat, the most dishevelled little maid you ever saw, hair, apron, and sunbonnet all wet with tears.

"Cheer up, Greta dear," I said, putting my arms around her. "I'll go. I'm not so awfully afraid of snakes as you are, and mother will never know who went."

"O Katharine, you are so good," she sobbed, "the best old sister in the world, but you can't ever do it. Mother is baking at the kitchen window, and you can't get through the yard without being seen. Then you will have to come back, and I'll be sent after all."

"No, you won't, either," I said. "Just come along with me to Willie's room. I have thought of a plan, and I'll fix it all right."

Will was tall and slight, just my build and height, so in a few minutes I had slipped into one of his working suits, with his broad, flapping straw hat over my tucked-up hair and a pair of long boots above my knees. For I did not quite fancy venturing into that snake region in my loose flowing skirts. Greta's tears were soon changed to sunshine. She was dancing all around the room, enjoying the fun immensely, for a heavy weight had been lifted from her timid little heart.

I hurried down the stairs, out at the front door and was half-way through the yard when mother caught sight of me from the open window. "Will," she called, "come, hurry up and go into town right away after sugar and some things! Hurry, now, and harness Snick as soon as you can!"

"MOTHER'S EYES OPENED WIDER AND WIDER."

On I ran out into the fields, whistling loudly, and never once turned or stopped lest mother might recognize me.

"Will!" she called. "Will, don't you hear me? Come, go to town at once. Will, Will, I say!" but on I ran till her voice died away in the distance.

Then I turned up the winding green lane which led to the blackberry patch. Down by the gate I found Greta's empty pail, which I hung on my arm, and soon I was in the midst of the horrors.

In the part of the country where we lived, the woods all around us were full of black snakes, which, on damp, warm days, would crawl out into the fields where grew the blackberries upon which they almost lived. They fairly swarmed; hence the country folks called them blackberry snakes. As Greta had said, they were thicker than bumblebees. They had crept out from the moist earth and were spread all over the vines, some of which were bent by their weight. I was not afraid of them, for I knew they were not dangerous; still I was little in love with my task. While I picked my berries the long, wriggling black things hung lazily here and there, only just turning their heads once in a while to look at me or to spit out their bright little tongues. The ground was thick with them. They wriggled along everywhere, under and over the bushes. I was glad more than once that I had Will's long boots on, when they were right among my feet. Poor little Greta! I thought of her many a time as I filled the six-quart pail and resolved to ask mother never to ask her to come there again, for I could imagine how the timid little heart would beat in the midst of that snake-haunted blackberry patch. At last my pail was full and I turned toward home, for it was almost noontime. As I came through the yard I heard mother's and Will's voices in the kitchen. Mother was scolding, while Will was in dead earnest trying to convince her of something. I was afraid of being seen, so I slipped into the shade of a wide-spreading lilac and waited till the coast was clear.

"Now, Will," said mother, "I can stand your disobedience, but I do despise your telling lies about it, which only makes it a good deal worse."

"I tell you I'm not telling lies," answered Will. "I'll swear to it. I never heard you call me, and I haven't been anywhere round the house since eight o'clock. I tell you again I've been off in the far pasture all the morning putting the fence up, and I don't see why you want to keep on saying that I was in the yard about ten o'clock."

"Well, Will Newman," mother said sadly, "I wish with all my heart I wasn't so certain, for I'd rather do anything in the world than keep my boy telling me lies, and why you acted so I don't know. You couldn't have helped hearing me. It had just struck ten, and I hadn't a bit of sugar to finish my baking, when I saw you run down through the yard, that same old straw hat on your head. I called you to harness Snick and go into town, but you never heeded, only started out through the field whistling as loud as you could. You must have heard me, Will, unless you're stone-deaf. Only don't say anything more about it since we can't agree."

"All right, mother," said Will. "I'll give it up, for I know at ten o'clock the old stage goes to meet the train at the junction, and when it passed I was close by the road putting the bars up, more than two miles from here. I'm beat for I can't think what you saw unless I was round here without knowing it," and Will forced a laugh that did not sound very merry.

I could not help what mother might say to Greta. I had to straighten things out, so I left the shade of the big lilac-tree, and walked right into the kitchen. Without speaking a word I laid my pail of berries on the baking table.

Mother's eyes opened wider and wider as she sat down, still staring at me, with the rolling-pin in her lap. "Well, I never!" she said. Will leaned against the open door laughing so hard that he could scarcely stand, while Greta's frightened little face peeped in from the dining-room.

"Now, mother," said Will, "I hope you will take it back about me being around here at ten o'clock. You see I've got a double, even to the whistling,"

and Will winked. For years ago, on our long tramps home from school, we had had many a debate as to who could whistle longest and loudest.

Mother with tears in her eyes told Will how sorry she was that she had been so positive.

"But I don't blame you," Will replied, "for Katharine and I looked as much alike as two darning-needles when she walked in. I wasn't honestly sure whether it was me or not!"

Then I told all the story of how I came to go to the berry patch, and even if I had not the very pleasantest time there, I had more than my reward in seeing Greta's glad little face as mother promised she would never again ask her to go among the blackberry snakes.

A Lively Spelling Game.

ALICE CHITTENDEN.

I want to tell the AMERICAN AGRICULTURIST boys and girls of a game they can make for themselves, and which, besides giving them a great deal of pleasure, will be of help to those who are learning to spell. My little seven-year-old boy owes his last promotion at school to the facility with which he has learned to spell through this game. It is called "The Game of Words."

It consists of a number of little squares of thin cardboard with large letters on one side. There must be greater numbers of the letters most used. For instance, about fifty e's, forty a's, thirty-two i's, thirty-five o's, thirty-six each of s and t, thirty each of r and n, fourteen each of c, f, g, k, m and u, eight each of b, p, v and w, sixteen d's, twenty-four h's, four each of q, x and z, nineteen l's and six y's. Make these squares, which can be either one or one-half inch in size of pieces of pasteboard boxes, not too thick, or of business cards which have one white side, as the backs must be all of one color. The letters can be inked or cut from a newspaper and pasted on.

The rules of the game are very simple. Any number of persons may play, and new players can be taken in at any stage in the game. The cards are all turned backs up in a circle on a table around which the players sit. Each draws a letter, and the one that gets the letter nearest to the first of the alphabet has the first draw. All the letters drawn to determine this are put in the center of the circle, face upwards, and called "the pool." The more players the more fun. No. 1 then draws a letter from the heaps lying backs up and tries to form a word; if he can do this he has another draw, and so on until he fails to make a word of complete sense. Words of two letters and proper names are not allowed. The person on the right then proceeds in like manner, except that he has this further advantage; besides drawing from the pool he can also draw from his neighbor on the left. For instance, if that person has "ranch," and his neighbor draws "b" he can take "ranch" away and make "branch." When no word can be made all letters drawn are left in "the pool." Only one minute is allowed to think about forming new words, and you can make the game six, eight, ten or fifteen words as its limit, or you can extend it indefinitely, the winner being the one who has the greatest number of words at closing.

It sounds very easy, but it is really puzzling to think quickly how to change or form words, and I have seen a number of "grave and learned" men uproarious over it.

A Sensitive Cat.

MARTHA CLARK RANKIN.

One of my friends, a Mrs. M., had two cats, a mother and daughter, both of which were very intelligent. These two cats once had kittens about the same time. Those of the mother were very homely, while those of the daughter were remarkably pretty. One day Mrs. M. said to the older cat: "Oh, Maltie, what homely kittens yours are! Aren't you ashamed to have such ugly things when Whitie's are so pretty?" The poor cat did indeed look ashamed, and very soon her mistress saw her take her kittens, one by one, down to the end of the garden, and drop them over the high fence which inclosed it. Mrs. M. was shocked, thinking that the cat had understood what she said, and meant to kill the kittens. But on watching her it appeared that she simply meant to hide them away where no one could remark upon their homeliness. Mrs. M. then called her and said: "Maltie, you mustn't carry off your kittens; they'll starve out there. Go and get them and bring them right back." Maltie evidently understood, but would she mind? She hesitated, but when the command had been several times repeated she seemed to decide that her mistress was in earnest and she must go. Very slowly she started off for the unfortunate kittens, and still more slowly and reluctantly she brought them back; but, instead of putting them where they had been before, Maltie carried them off to the farthest corner of the shed, as if anxious to keep them out of sight and hide her mortification! Does not this show not only intelligence, but a good deal of sensitiveness also? Maltie could go all over the house, lifting latches and even turning door-knobs, and knew many tricks.

The Game of Bean-Bags.

The board for playing bean-bags shown in the engraving can be made of oak or of pine, stained to imitate cherry or walnut. It should be eighteen inches wide and thirty long. The opening is five and a half inches square. The piece which elevates one end and keeps the board in position when in use is eighteen inches long and nine wide. It is attached to the board with small hinges, and kept in position with hooks and eyes when ready for playing. The bags, which should be six in number, are made of scarlet and blue awning material, five and a half inches square; or rather five are that size, and the sixth, called "Jumbo," is twice the length of the others. The small bags should not be more than half filled with the beans, each holding half a pint. The amount to be played can be set by the players. They stand eight or ten feet away and try to throw through the hole. Each successful throw counts ten; if the bag lodges on the board, 5; if it falls outside, it takes ten from the count. If Jumbo goes through it counts twenty. Each player takes all five bags and Jumbo at once, and throws them, one at a time. The game is scored by an umpire. When it is played as an outdoor game, throw the bags through a suspended hoop, wound with bright colors.

BOARD FOR BEAN-BAG GAME.

Five More Puzzle Gifts.

We have never offered a more attractive list of prizes for puzzle-answers than the following, which are to be given to those who send in the five best lists of answers to the puzzles printed below:

For the best list of answers the prize will be a stem-wind and pendent-set nickel-cased watch. This is one of the handsomest and best of the numerous cheap watches now made and is a good time-piece, and nowhere sold for less than four dollars, while the usual price is five dollars. Either a gentleman's or a lady's watch will be furnished, as may be desired.

For the second best list of answers we will send either a gentleman's gossamer overcoat or a lady's water-proof circular, an excellent and serviceable garment usually sold at five dollars, and nowhere to be bought for less than three dollars. The winner will be allowed to select the size which will fit.

For the third best list, a Florence plush toilet set—a handsome Florence brush, comb and hand-glass in a nice, satin-lined case. This set is well worth the two dollars which it would cost, if purchased.

For the fourth best list, a complete writing tablet made of embossed leather with inkstand and places for paper, envelopes, stamps, and blotters; price, if purchased, $1.25.

For the fifth best list of answers, an Excelsior fruit and vegetable press, one of the most useful and valuable of inventions for household use; price, if purchased, seventy-five cents.

Answers must be mailed on or before the 20th of this month to "Puzzle Editor, AMERICAN AGRICULTURIST, 52 Lafayette Place, New York."

59. ANAGRAM.

Sin sat on a tin tar tub. (The answer is one word.)

60. HISTORICAL.

1. In what year did France, by treaty, first give up her claim to American territory east of the Mississippi? 2. And at what fort, within that territory, was the French flag last lowered?

61. THREE PUNS.

1. Spell the fate of all earthly things with two letters. 2. How can you tell a man in one word that he had a late breakfast? 3. Why is faith like honey?

62. WORD SQUARE.

1, Marrow; 2, a notion; 3, threefold; 4, a measure.

63. DECAPITATIONS.

1. Behead to encourage and leave a wager.
2. Behead to weep and leave indisposition.
3. Behead a buffoon and leave one.
4. Behead a mineral and leave equality.
5. Behead distance and leave a gait.

64. DROP LETTER PUZZLE.

—s—c—c—a—i—n. (The answer is one word.)

65. OLD BUT GOOD.

There is a noun of plural number,
Foe to sleep, and quiet slumber.
If any other noun you take,
By adding *s* you plural make,
But if you add an *s* to this,
You single make that plural was,
And what was bitter heretofore
Is sweet, and bitter is no more.

66. CHANGED HEADINGS.

I am an animal. Change my head eleven times and I become successively highly valued, alarm, machinery, to listen, adjacent, a fruit, to raise up, to scorch, to rend, to have on, and a division of time.

ANSWERS TO THE JUNE PUZZLES.

43. Moscow, Pesth, Venice, Madison.

44.
C O L T
O L I O
L I O N
T O N E

45. Butterfly, flutter by.

46. Ascent.

47. Jehoshabeath.

48.
Y O L A
O D E R
L E O N
A R N O

49. Often.

50. 238,337,684.

51. "The Ancient Mariner," "The Lamp-lighter," "Childe Harold," "The Scarlet letter," "Thanatopsis."

52. Milton, Goldsmith, Campbell, Herrick, Cowper (person), Wordsworth, Young, Beattie, Hemans Otway (otter).

WINNERS OF THE JUNE PRIZES.

The June prizes are awarded as follows: The first to J. D. Hoban, St. Joseph's, Somerset, Perry Co., Ohio; the second to M. R. Sears, Corry, Erie Co., Penn.; the third to Miss Hattie Ashby, 1,103 North st., Des Moines, Ia.; the fourth to Miss Cora E. Smith, Westborough, Mass.; and the fifth to E. F. Meesson, San Leandro, Alameda Co., Cal.

COMMENTS BY THE PUZZLE-SOLVERS.

My grandpa has taken the AMERICAN AGRICULTURIST a great many years, but this is the first time I have ever tried to solve the puzzles, and a great time I have had of it. I have chased them all over the lots, and finally succeeded in capturing them all but the "Child with a wig on." That has eluded my grasp. I suppose I shall go into a corner and hate myself when I find how easily I could have caught it had I only had my wits about me. GERTIE GARRIGUES.
Waterville, Ct.

I find your puzzle column remarkably interesting; there is always something requiring a good deal of thought. DR. WM. H. DANFORTH.
Worcester, Mass.

The A. A. is splendid.—M. A. PRESTON.
Charlotte, Mich.

You should have headed No. 50 distraction instead of subtraction; it drove me there.
HERBERT OWEN.
Conesville, Iowa.

DEAR PUZZLE EDITOR: I do not like your arithmetical letter puzzle this month [June], and if I had a list of the subscribers to the AMERICAN AGRICULTURIST I would get up a petition to you to leave them out. All the others are lovely; and, whether one solves them or not, there is great interest and profit in the trial. J. M. TAFT.
Williston, Vt.

A Story of a Star.

EDITH ABELL.

In her little white bed, hung with pretty lace curtains, lay Ethel listening to a song her mamma sang as she put the nursery in order for the night. She left the curtains open that Ethel might look out and see the stars and the moon before she fell asleep. Ethel liked the moon best, but it was not always in the sky at night for her to see, but the dear little stars were always there unless it rained, and they were so bright, and they winked so funny—just like Uncle Harry when he played with her and told her merry stories. Ah, if she could only reach them! Ever since she had first seen a star she had wished to get near enough to it to touch it, to hold it in her hands and to have it for a new plaything. But somehow she never could have a star. She had a great many lovely dolls and a doll house and chairs and tables, tea-sets and a closet full of costly toys, but they were not like the stars.

Her mamma came to her side, saying, "Ethel must now say her prayers and go to sleep." Then she laid her face beside Ethel's and both said "Our Father," and "God bless papa and mamma"; "and the stars," Ethel always wanted to say, but did not because her mamma had only taught her to ask the blessing on her parents. Then mamma kissed her and left her for the night.

There was nothing Ethel liked better than being told stories. As she looked out of the window at her friends, the stars, it seemed to her they were alive. What pleasant little friends they were! She thought she must talk to them and tell them some stories; they might then come near enough to hear her. She would talk first with the brightest one that she had heard her mother call Venus. It was rather a pretty name, Ethel thought. So she began:

"Once upon a long, long time ago, Venus, when I was a very little girl"—

Venus came nearer, so as to hear Ethel better. She seemed to be walking down a very long, narrow and shining path and the nearer she came the prettier she looked. She was even prettier than mamma, only she hadn't that nice smile mamma had. Her dress was yellow and her hair was yellow and she was as bright as the moon. She came right in through the window, which she didn't open. Ethel thought that was very queer. *She* couldn't go through any window that was shut. And she didn't think she wanted to try, because pussy, who became frightened one day, went through the glass and broke it, and she cut her dear little pink nose. Now Venus didn't break the glass and she didn't hurt her pretty nose either; that was very strange, Ethel thought.

Ethel sat up in her crib and stretched out her hands to Venus: "O, you dear lovely, bright Venus!" she cried. "I have wished for you *so* long, and now you have really come down to play with me and tell me all about yourself, haven't you?"

Venus nodded and shook out her golden hair. "Dear Ethel," she said, "I know all your thoughts up there in the sky, and when a nice quiet night came I said I would come down and chat with you. I wish you could go back with me. We stars have such a nice time! We play (that's when you see us twinkle) and we dance with the clouds—you can see us rush along with them, can't you? And we make chains of tiny little stars that we catch as they fly by. Your folks call them meteors, but that's not at all a pretty name for our toys."

"O, yes," said Ethel, "I know—those are the stars that fly along and go out."

"No," said Venus, "they don't go out. We catch and hide them from each other, and such fun we have finding them! But we can not always have them. Some summer nights when it is very hot we find ever so many."

"I thought those were fire-flies," said Ethel.

"No, they are our star balls, and there is a time in winter when we have to put on our mittens and play. But we can always play ball with them; they have rough, bright edges that don't hurt and we catch them easier than you do your balls. Aunt Cassiopeia, who doesn't leave her chair, looks after us, and she is very kind and holds us in her lap if we fall down and hurt ourselves, but we don't fall often. We had a nice, dear little playmate, one of the little Pleiades girls. She fell down, poor little thing, and slipped through a hole in the sky, and we've never found her since, though Uncle Orion has hunted everywhere for her."

"Perhaps," said Ethel, "she tumbled down on the earth and some nice little girl has her for a playmate."

"O, no," said Venus, "we all know how to get back from here, and besides, we should see her here; we have such bright eyes we can see every one."

"Venus," said Ethel, "I wish you had brought one of the meteors to play with. It must be such a pretty toy. I never had one."

"WHAT DO YOU DO, VENUS, WHEN THERE IS A DREADFUL THUNDER-STORM?"

"Well," said Venus, looking around, "I think perhaps this room is rather small to have a real good time with one. You see they fly pretty far, and one might fly out of the window and get lost, and then if some boy found it he would have to put it back in the sky, and perhaps he wouldn't know how to get up there."

Ethel thought that was quite likely. She asked Venus then if she should be a very good girl would she not come some warm night when there were a great many meteors and carry her up to the great fields where the stars and Aunt Cassiopeia were, and let her play with them all.

Venus said, "Yes, if she could walk along the path, but it was only just wide enough for her feet and Ethel might fall over."

"What do you do, Venus, dear, when there is a dreadful thunder storm?"

"O," replied she, "there's nothing we like better than thunder storms; they are our fireworks. You see the wrong side of them, but we see the right side and they are very handsome—better than those you have on the Fourth of July. We always have them on our birthdays and on holidays."

"And where do you go day times? I never see you then," said Ethel.

"Well, Aunt Cassiopeia puts some of us to bed, though some of us go round on the other side of the world to see our cousins and relations there. We don't have as good a time as we used to have, because a great many men have taken long things they call telescopes and are always staring hard at us. We don't like it at all."

"I shouldn't like it either. I'm sure I couldn't play if men stared at us when we run about the garden."

Here Venus began to look uneasily around her. "Dear Ethel," she said, "I think daybreak is near, it is growing so light, and I mustn't lose my path home; it will all fade away in the sunshine and I shall get lost here." And she bound up her golden locks, kissed Ethel and promised to come back some other night.

She slid through the window and vanished along the path of light. Poor little Ethel grieved to lose her friend and stretched out her hands crying and calling, "Venus, dear, dear Venus, come back to me!" She cried so hard she awoke and found herself lying in her mother's lap by the fireside.

"What does my little girl want?" said her mamma.

Ethel tried to tell her about Venus and her visit, but fell asleep again before she could say much, and her smiling mamma tucked her up again in her pretty crib, drew the window curtains and she only awoke to see the sunshine.

Venus's little path was quite gone when she looked, but she saw her up in the sky the next night, and she fancied the star smiled and winked at her, but she never came again.

Mound-Building Birds.

MISS H. E. SMITH.

The maleo (*Megacephalon Maleo*) is a kind of fowl which it is rather surprising no one has been at the pains to domesticate and introduce into civilized countries, for its flesh and its eggs are both excellent and the bird would apparently be easily tamed. The maleo belongs to the family of Megapodes or mound-builders which is abundant in the Australian region, but itself is peculiar to the island of Celebes. It is about the size of a small turkey, being twenty-four inches in length and having an average weight of nearly four pounds. For a wonder the male and female birds are so nearly alike in plumage that it is difficult to distinguish the one from the other. They are of an entire brownish black with the exception of the breast and under parts, which are of a lovely rosy pink. Their ordinary gait is slow and stately, but when they choose they can run rapidly. In the months of August and September the birds come down in large numbers from the interior forests to the seashore, where they build from the beach gravel a little above high water mark the curious mounds from which they take their name. These are not regular erections, as the name would imply, but are rather irregular elevations and depressions caused by the birds' efforts to hide their eggs beneath three or more feet of sand and gravel. Where many of these nests are together they present the appearance of a rough, confused sea. The bird's foot is its only spade or shovel and is exceedingly well adapted for the purpose, being large, powerful, broad-soled and slightly webbed at the base of the toes. During the operation of covering the eggs with the loose black sand or gravel upon which they are deposited, the cock bird digs as well as the hen, and it is a curious sight to watch them at work, the sand being thrown up in perfect fountains at each stroke. The ostrich is acclimatized in southern California, and there is no apparent reason why the mateo should not be similarly introduced.

FROM NEAR AND FAR.

A Homestead in Northwestern Kansas.

To my thinking, this region we have come to, notwithstanding the sod-house and the dugout, has a distinctive charm when the weather is fine. It has also a distinctive dreariness when it is not fine. In autumn we had long spells of almost perfect weather, and the girls and myself used to go out and wander around the farm, to get acquainted with its topography.

For the most part our farm is level, but, besides the shallow draw or ravine in which our house is built, there is also a deeper one on the southwest, which we call the big draw. The ends of two other draws from the west join at this southwest corner, and make an acre or two of irregular, broken land. This place delighted the children. There were so many kinds of stones scattered around; also a few big rocks, which the settlers here call magnesia. The soil at this place wears away under the action of wind and rain. There are no real hills, though the entire region is 3000 feet above sea level. But there is always a part of the prairie we call the divide, and from it the land slopes, almost imperceptibly, toward the edge of one draw or another. When we first came here, all around our farm, as far as one could see and a good deal farther, there was not a foot of cultivated ground; nothing but the crisp, dry buffalo grass, and no vestige of water. But here are a few Trogolodytes (dwellers in caves), and, if one of these—myself for instance—should wander forth and, on entering one of these great, silent draws, should encounter a Megatherium (a great antediluvian monster), it would seem to me in no wise out of keeping with the surroundings. The only thing one does meet, however, with an old-world look about it is the tortoise. Of wild animals, there are still some coyotes, but I have never seen one close enough to distinguish him from a sneaking dog. We have also the swift—a small kind of fox—the badger, and skunk. There is a prairie-dog town about a mile from us. If one keeps at a respectful distance, he can watch the little fellows sporting around, and toward evening, at the same place, the little prairie owl puts in an appearance. It is said the rattlesnake takes up its abode in the same community, and the only live rattlesnake I have seen in this region was just in the act of disappearing into a prairie-dog hole. The graceful antelope also figures on our horizon. Sometimes two or three will appear, about half a mile from the house, and even nearer. They graze as they walk slowly along, and every little while lift their heads and sniff the air. But they are very shy, and there is no kind of cover behind which a person can crawl up to them.

The weeds and plants here are different in a general way from those in the Eastern States. Four different kinds of cactus grow in the buffalo grass. Wherever a bit of sod has been plowed and then left to mature, weeds of many kinds start to grow. From a very small root, that seems to have little hold on the earth, there will spread a ramification of stems, with diminutive leaves, whose sole object seems to be to cover up and shade the earth as much as possible. The tumble-weed is such a plant. From a small root it spreads outward and upward, and, in one season, makes such progress that, when a sharp wind comes in the fall, it becomes detached from the earth and goes flying along the prairie like a young haystack, scattering thousands of seeds for next year's carnival. The sunflower and many other flowers grow plentifully on the prairies and in the draws—many of them very fragrant. In the draws there are various grasses, the best of which is blue-stem. It is from this that we make our haystacks. On the prairie, however, where it has never been plowed, the buffalo grass holds sway. It is a very good kind of wild grass. The cattle are fond of it, and in June, when it blossoms and bears seed, they grow fat eating it. It also cures on the stem where it grows, and makes pasture for cattle all winter if there is not too much rain.

MRS. I. B. RUSSEL, Sheridan Co., Kan.

Stock and Crops in Central Indiana.

The spring came in cold and wet this year, making the pastures late. But oats started well; a good breadth of corn was planted in the bottoms, and it looks well. The peach buds were killed, so we shall have no peaches this year. Times are fairly good for an old, long-settled State like this. Land sells for ten to sixty dollars per acre, according to quality. The best lands are in the river bottoms, and produce good crops of corn, grass, and small grains. Our timber is pretty thoroughly culled out. We formerly had the best black walnut and yellow poplar (tulip tree) in the world.

The interest in pure-bred stock has become very general, and the results are very beneficial. Great numbers of fine hogs are raised and fattened every year. Quite a notable change has occurred within a few years in the system, the hogs being slaughtered at less age and lighter weights than formerly. The market does not call for excessive size and gross fatness.

N. D. KISHPAUGH, Morgan Co., Ind.

The Red River Valley of the North.

This is the land of "magnificent distances". No one can have any true idea of the meaning of the term "boundless prairies" unless he has seen the valley of the famous Red River of the North, the garden of the Northwest. Everybody ought to visit it once at least, and twice if possible—once in June or July, and again in January. There is a very decided difference in the temperature of these seasons. There is plenty of ozone here, but it keeps on the move, so that one has to keep hustling to get a proper amount of it, and my experience is that you have to hustle more in January than in July.

I believe a man can get more weather here per month than in any other place in the world. It is a wonderful country. When we remember that ten years ago most of it was a "howling wilderness," and then to see it as it is to-day is indeed enough to make one stare. (There is plenty of the howling here yet.) The teaching of the AMERICAN AGRICULTURIST has become the motto of most farmers: "The scrub must go," and upon nearly every farm will be found good stock. It is not all full blooded, but all breeders and farmers are reaching out after the best in the way of sires. A Roman-nosed, curby-hocked, hog-backed, slab-sided horse stands very little show here, no matter what kind of a pedigree he may present. "We want the best," is their cry, and especially as pertaining to horses. They want large horses, weighing well up to a ton, with bone, muscle, action, and style. Farmers, as a rule, prefer paying a $20 fee for the first-class horse than ten or twelve dollars for a grade. The result in three years justifies them. This is the line upon which farmers are working, and the result would surprise a new-comer. We have our horse ranches, cattle ranches, sheep ranches, with the accompaniment of pure-bred hogs and chickens. We have a peculiar kind of dog—yellow in complexion, a drooping tail, and a sorry expression of countenance. In felines, we have most of the colors ever seen in a cat; but they seem to be quite uniform in their habit of disposing of young chickens.

I am glad to be able to report that the crops show every prospect of a good harvest. The spring was cold and backward, but still the farmer smiles, for, he says, so was the spring three years ago, and we had most wonderful crops. There was a larger average of millet sown than usual, as it is well liked for hay. Considerable timothy was also sown, but it is still a doubtful crop.

G. W. K., Walsh Co., N. D.

Abandoned Land in the South.

There are in Virginia, the Carolinas, and some other Southern States, large areas of abandoned, or partially-abandoned farming-lands. In these districts the plantations have been given over to scrub oak, old-field pine, and brambles, because the former system of agriculture did not pay, or because a long-continued robbery of the soil resulted in such impoverishment that cultivation at last would not produce a livelihood for labor expended. Land that has been impoverished by tobacco—one of the most exhaustive of crops—or by cotton, as has been done in the South, may be restored by a change of agriculture, and this restoration is even now going on. Fruits and vegetables will be largely cultivated in the Southern States on account of the good markets for such products in the large Eastern cities. It will also be found profitable to raise cattle, grain, wool, and dairy products. The result of this changed system of agriculture will make the South even more prosperous than it was in the palmiest days of plantation life.

When all the desirable agricultural land of the West is occupied—which is but a question of a few years—then these lands in the Southern States will receive attention. Our population is increasing rapidly, and the time will come when these farms will have to be subdivided. The average size of our farms in this country is four times that of the farms of France, and in Belgium, Holland, Germany, and England they are still smaller. While to-day in many sections farms of seventy-five and one hundred acres will barely pay for cultivation, the time will come when farms of one-third or one-fourth that size must pay. It is useless to argue that it can not be done; such farms are cultivated in a way to pay even to-day, and must become even more generally profitable in the future. It would be well for the respective State Departments of Agriculture to establish experimental farms in these neglected sections. Such experiment farms should be conducted in a manner to demonstrate to the unsuccessful farmers of the State how they can take their worn-out farms and renovate them; how they can carry on an industry that has hitherto appeared to be unprofitable in a way to show a satisfactory balance sheet.

F. K. MORELAND, Virginia.

Soils in the Southern Mississippi Valley.

I am well acquainted with lands that twenty years ago would make a bale of cotton per acre, that to-day are worthless, not worn out, nor exhausted, but simply washed away. I may state in this connection that there is a deal of misapprehension among writers both North and South in regard to Southern soil; Northern writers state that "the soil of the South was not by any means deep at the start," leaving the inference that as a natural consequence they are easily and quickly worn out and exhausted! That is not correct, but the facts in the case are these: first, that although we have some poor soil, the soils of the South will abundantly hold their own when compared with any other portion of Uncle Sam's dominion; second, a great many of our Southern writers to the contrary notwithstanding, our lands are not really and truly "worn out," nor are they exhausted of the elements necessary for the production of a crop, and a good crop at that; they are (as I stated before) simply washed away; the humus is likewise in a great many instances about used up, in almost every instance brought about by an injudicious system of culture. This injudicious method consisted in the lack of a systematic rotation of crops, running the land too long in cotton; as cotton is cultivated in drills and plowed late, it is in just the condition for the freshets of July and August to carry the soil off to the Gulf of Mexico, which they have certainly done. This result has been precipitated by some of our so-called farmers, in place of circling, running their rows up and down the hill, and again by insufficient drainage on lowlands. I will conclude by stating the incontrovertible fact that the far-famed valley of the Nile contains no richer land nor deeper soil than the alluvials of the Mississippi and its numerous tributaries.

G. H. TURNER, La Fayette Co., Miss.

The Bark Industry in West Virginia.

The bark industry, in certain sections of the country, has become a great traffic, especially in Morgan county, West Virginia. Many readers may ask what is the bark industry, and for what purpose is the bark used? The bark spoken of is that which is taken from the chesnut-oak in the spring just after the sap begins to run, during which time the bark may be easily removed from the tree by the use of a common ax. The bark, after being peeled, is then stacked, so as to prevent injury from the weather. It is then hauled and sold to tanners, who grind it up into pieces about the size of a kernel of corn. It is then put into vats, and water poured over it, extracting from the bark a liquor called tan-liquor. This tan-liquor, which is of different degrees of strength, is then used in the manufacture of leather from hides. The leather manufactured from the bark and mineral waters of Morgan county, West Virginia, sells for 1¼ cents per pound more than leather manufactured in any other part of the world.

After exhausting all the tan-liquor, the bark is thrown out of the vats to dry, and afterward used as fuel for the engine which grinds the bark; and last, but not least, the ashes are used on the land as a fertilizer.

This bark industry, which has for many years been the great traffic of the county of Morgan, is

beginning, on account of competition, to grow less profitable, and farmers are turning their attention to tilling the land. The farmers always find a ready sale for the products of their farms, and are devoting more time and attention to scientific farming. They read more rural papers, and get new and better ideas in regard to the production of the best crops. Thus they learn how to prevent farm life becoming a drudgery; are more prosperous, and live longer, better, and happier lives.

R. S., Berkeley Springs, W. Va.

East Tennessee.

The Cumberland plateau is a district in Eastern Tennessee, extending entirely across the State from north to south, and embracing an area as large as the entire State of Connecticut. It is, generally speaking, a table land, having an elevation of from one thousand to twelve hundred feet above the sea, but with some marked depressions, constituting narrow valleys through which the streams flow, and with some striking elevations reaching to the height of two thousand feet. It is a country quite rich in minerals, and of great geological interest, the western edge of the plateau, the "break of the mountain," as it is aptly termed, affording at certain points unequaled facilities for object lessons to one who would study the formation of the earth's crust. At these points the plateau ends abruptly at the edge of a precipice seven hundred or eight hundred feet in height. This usually has a very slight inclination, and the face of the precipice is sheer rock, almost bare of vegetation. Along this face are clearly defined the different strata. These strata have a well-defined dip toward the east, the conglomerate, which crops out upon the surface at the western edge, being buried deeper toward the east.

Upon the western portion the soil has been formed by the wearing down of the sandstone. It is sandy, of slight depth, underlaid by sandstone rock. Proceeding toward the east a better depth of soil is obtained, and it is of a more retentive character.

The plateau is almost wholly covered with timber. There were, until within a few years, vast forests of pine and oak; but within ten years, since the country has been penetrated by railroads, much of the best timber has been removed. Not much of the land that has been cleared has, however, been brought under cultivation, and is rapidly being reforested. A day's journey in almost any portion of the table land will do much toward lessening one's fears of a timber famine. Acre after acre and mile after mile are covered with a dense growth of young pines, already standing straight and tall. Within another generation, certainly by the time that the most of these lands will be needed for cultivation, they will be again covered with timber of greater marketable value, probably, than the original forest, as railroads will by that time make the whole of the plateau more accessible than now. While good crops of the cereals can and will be produced it is not for such agriculture that the plateau is best adapted. As long as much of the land remains uncultivated, the wild lands or "range" being wholly free pasturage, it is admirably adapted to stock raising; and good herds of Shorthorn cattle should take the place of the few lank and lean native cattle that are now to be seen, and flocks of sheep should replace the present razor-back hog.

The sheep that are wanted are not the fine-wooled sorts, but the larger mutton breeds. The range will carry stock eight or nine months in the year and will afford some sustenance almost the whole winter through, as snows and freezing weather are infrequent and never of long duration. Vegetables do well upon all the better soils of the plateau. I was shown good potatoes which had yielded upon large plats at the rate of two hundred bushels to the acre. I also saw fine Weathersfield onions grown from seed; and sweet potatoes, carrots, turnips, etc., yield abundantly. As yet, however, because of distance from market and the lack of competing lines of railway, not much can be done in this way. The local demand is slight, but prices are always good. In the summer a considerable trade could be had from the hotels, many of which are located among the mountains, and most of which have a good summer patronage. Tobacco has been grown to some extent upon the plateau, but not much as a market crop. Each settler would once in three or four years grow a sufficient supply for his own use during that period. Where grown and handled intelligently, upon good soil, the yield has been fair and the quality excellent.

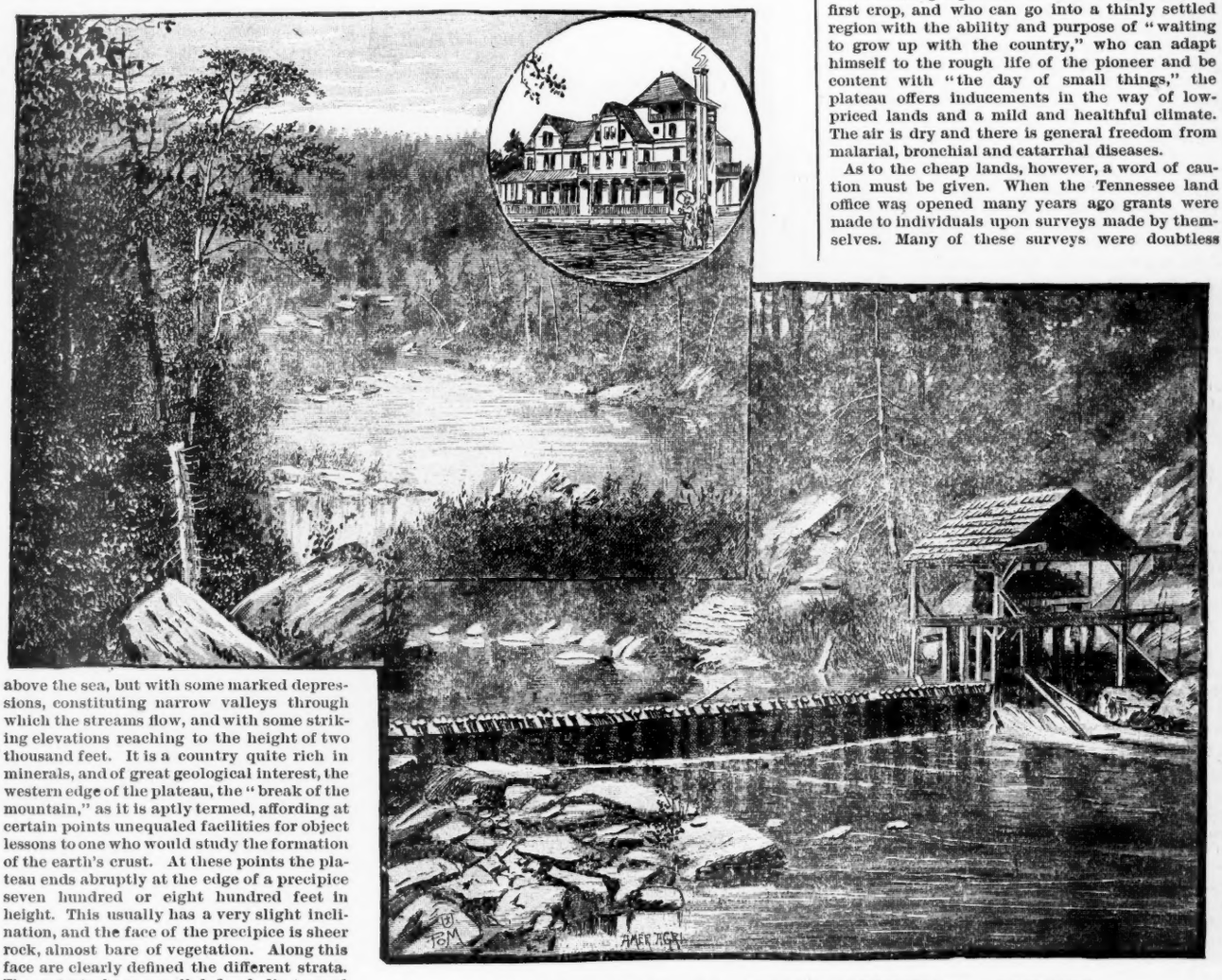
The dairy business could be made very profitable in the vicinity of small towns or of the summer hotels. Milk sells at from eight to ten cents per quart, and surplus product could be made into butter and shipped to the cities.

But fruit-growing is the industry *par excellence* to which this region seems adapted. All orchard fruits come into bearing very early, and off years are rare. Apples and plums in particular do well, and peaches when frosts do not interfere. Many ambitious efforts are being made with the grape, with a view to the wine industry and with every prospect of success until the last two years, when untimely frosts wrought havoc with the crop on some portions of the plateau.

For a home-seeker who is limited in capital, but who can sustain himself during the first year, while clearing a portion of land and growing the first crop, and who can go into a thinly settled region with the ability and purpose of "waiting to grow up with the country," who can adapt himself to the rough life of the pioneer and be content with "the day of small things," the plateau offers inducements in the way of low-priced lands and a mild and healthful climate. The air is dry and there is general freedom from malarial, bronchial and catarrhal diseases.

As to the cheap lands, however, a word of caution must be given. When the Tennessee land office was opened many years ago grants were made to individuals upon surveys made by themselves. Many of these surveys were doubtless "projected" upon paper without any exact knowledge of the land. Boundaries were vaguely described and in many cases the grants overlapped each other. Thus titles will require the very closest investigation or else the purchaser may find it more expensive to retain than to attain his land. Land companies are now rapidly obtaining possession of vast tracts of these lands. Operating on a large scale they are able to perfect and guarantee their titles at the minimum expense. A purchaser from these companies may be sure of a good title, or at least of having his title guaranteed and defended. But of course this means the payment of a much higher price for the land.

JAMES K. REEVE, East Tennessee.



CUMBERLAND PLATEAU MOUNTAIN SCENES.

Does Not Like to Lose an Old Friend.—I am so well pleased with the AMERICAN AGRICULTURIST that I do not like to lose a single number of this dear old friend, who has visited my home for thirty years.

J. D. PORTER, Fayette Co., Pa.

SCIENCE IN FARMING.

Gleanings from the Bulletins.

ALABAMA, No. 15, pp. 6. Kerosene emulsion and how to make it is treated by Professor Atkinson. This is a cheap and effective remedy for soft-bodied insects, as plant-lice. The formula is one-half pound of bar soap, one gallon of water, two gallons of kerosene; afterward dilute to suit the insect. It is particularly good for the chinch bug. A spraying pump is the most satisfactory means of applying the remedy.

CALIFORNIA, No. 86, pages 6. *Preservative Fluids for Fresh Fruits.* The best preservative of grapes for exhibition or museum specimens found is corrosive sublimate, half ounce to a gallon dissolved in water, care being taken to previously wash the fruit. All such fruit is, of course, poisoned and should be so labeled for the sake of safety. Professor Hilgard points out some serious objections to the sulphuring of dried fruits. Thus, dirty or damaged fruit may be thereby made presentable. The natural flavor of the fruit is replaced by the odor of a chemical laboratory. In the third place it is unhealthy, containing an antiseptic that impedes digestion. From the table of analysis given it may be gathered that the amount of free sulphuric acid is considerable. We reproduce a few lines of this admirable bulletin upon a subject that touches our palates, our purses, and our health: "But so long as the public, and its agents the dealers, continue willing to pay from thirty to fifty per cent more for the whitened sepulchers offered them in the shape of sulphured fruit than for that which retains, with its natural flavor and sweetness, the natural tint of dried fruit, and with it the marks of careful or careless treatment, so long will the producer continue to supply the demand for the doctored article unless, indeed, the law should intervene, as has been done in most European countries. There the sale of sulphured fruit is simply forbidden as injurious to public health and as coming under suspicion of having been 'doctored up' from an inferior article with fraudulent intent." All sulphuring should be done before drying, as it is then less injurious.

CONNECTICUT, Second Annual of Storrs Station, pages 184. A large number of experiments have been made upon the appropriation of nitrogen by plants, and they all show that the free atmospheric nitrogen is employed by leguminous crops such as clovers, peas, lupins, as had been demonstrated by Hellriegel and others. The connection between the root tubercles of clovers and the acquisition of nitrogen is also confirmed. The practical inference is that leguminous crops should appear in the rotation to not only collect nitrogen for the food of stocks, but to add this valuable plant constituent to the soil for other crops, as the grains that need to get their nitrogen from its soluble compounds in the soil. Under bacteria in milk, cream and butter, it is shown that these minute germs thrive in milk and cream, souring and favoring the ripening of cream—an advantageous process. Keep milk as free as possible from bacteria; cool the milk immediately after it comes from the cow, but favor the growth of bacteria in cream by keeping it warm. A large part of the report is occupied with results obtained in experiments with fertilizers upon corn.

DEPARTMENT OF AGRICULTURE. Organization of experiment stations and agricultural colleges in the United States. Three new stations and two branch stations have been established during the past year. This bulletin contains a brief statement of the course of study of the agricultural schools, names of instructors, and much other matter of importance to all interested in the better education of the farming classes.

With the above there comes from the Washington office of experiment stations the so-called Record, in which brief abstracts of the station bulletins from July to December last are given. In addition to this, some interesting statistics of German stations are given. Many of these stations were organized by agricultural societies, and are sustained by them. In Germany the work is much more specialized than with us. Laboratory work received more attention than field experiments.

IOWA, No. 9, pages 48. This bulletin has its matter under four heads. Director Speer reports a comparative study of fodder plants and other food stuffs. "It is not poverty of soil but want of skill to till them and breed, and feed, the domestic animals properly, which is driving so many of the sons of farmers into other occupations." The tests at the station upon green fodders for winter use point with more favor toward roots than silage. Professor Patrick, as chemist of the station, presents a plan for preserving milk samples for testing their value. This method is known as the "relative value plan," at creameries. The need of some swift and accurate method of testing the milk as it arrives at the creameries has long been felt. An exhaustive study of the habits of the plum curculio and plum gouger, with remedies, is presented by Professor Gillette and from the nineteen conclusions the following facts are gathered: The gouger appears earlier than and is more injurious (on native plums at Ames, Iowa, which it preferred) than the curculio. Paris green recommended for the curculio is of little value for the gouger. The curculio is not double brooded in Iowa and develops rapidly in apples. London purple is an effective remedy for curculio.

KENTUCKY, special bulletin *C*, pages 8. *Treatment of Certain Fungous Diseases of Plants.* Professor Scribner gives in concise form the most approved methods of treatment for several of the leading fungous diseases of plants. For black rot of the grape he recommends the Bordeaux mixture for the first two sprayings and ammoniacal solution of carbonate of copper for the other three or more. The grapes may be cleansed of the copper compound by dipping them in a weak solution of vinegar or acetic acid. The modified *Eau Celeste*, made as follows: Sulphate of copper one pound, carbonate of soda, two pounds, aqua ammonia one and a half pints and water thirty gallons, is a preventive of the apple scab. Potato rot may be checked by spraying the vines with the Bordeaux mixture, or the ammoniacal carbonate of copper. Smuts in oats and wheat have long been partially destroyed by soaking the seed grain in blue-stone. A better method is suggested, namely, the use of water heated to 132° in which the seed is soaked for a few minutes.

KENTUCKY, No. 28, pages 16. In one year's experience with various fertilizers upon tobacco, the following conclusions are reached: The quality is improved and yield increased whether the potash, phosphoric acid, or nitrogen are used separately, or in various combinations. Potash and nitrogen in combination produce the best results; nitrogen as nitrate of soda produced the best quality; potash as muriate and as sulphate was equally effective. One hundred and sixty pounds of nitrate of soda or three hundred and forty pounds of cotton-seed meal furnish sufficient nitrogen, and one hundred and sixty pounds of sulphate or muriate of potash is enough potash per acre for a good crop of tobacco.

MASSACHUSETTS (Hatch station). Special Bulletin (pages 44) upon "the most profitable use of commercial manures," a translation by Professor Wellington of a paper by Paul Wagner, of the agricultural experiment station Darmstadt, Germany. The following are some of the conclusions: Phosphoric acid, potash, and nitrogen can increase the crop when all other factors are favorable. The first two of the above artificial manures should be stored as surplus in the soil—that is, in excess of the demands of the most exhaustive crop. Nitrogen must not be added in excess, but only in quantities necessary for the full growth of the crop. The "nitrogen increasers" (clover, peas, lupins, etc.) normally need no fertilizing with nitrogen. On poor soil, however, it may be added to quicken the growth. But the "nitrogen consumers" (grains and hoed crops) require the application of nitrogen. "The three most important and difficult tasks in manuring are, to catch the nitrogen, to hold it, and then to obtain from it the greatest possible service."

MASSACHUSETTS (Hatch Station), No. 9, pages 48. In the soil tests with fertilizers the following facts are deduced: Nitrogen should be applied in small quantities frequently, as "fractional dressings." Potash seems most likely to afford a profit, but is best used with small quantities of phosphate and nitrogen. Lime is beneficial, while plaster does no good. The experiments demonstrated in a striking manner that soils vary widely, and that results applicable to one locality may not be to another. "It is folly to continue the indiscriminate and blind use of fertilizers." Putting questions directly to the soil is the only way to obtain satisfactory information, and such experimentation is usually profitable.

MICHIGAN, No. 61, pp. 8. Professor Cook presents the leading facts upon foul brood, one of the most destructive as well as obscure diseases of the honey bee. It is the result of a microörganism of the bacterial type, and named *Bacillus alvei*. When this minute vegetable growth makes its appearance in the bee-yard "we must quarantine all diseased colonies, and spare no pains to prevent the bees from healthy colonies getting either at the honey or comb from the foul brood hives." For the ignorant and careless the best remedy is to destroy the diseased colonies. Others can keep the malady in check, if not eradicate it, by using salicylic acid or carbolic acid as a spray, and also mixed with the food. The best time to use these is during a honey flow. Robbing is one of the most ready means of spreading the disease, and great care needs to be taken in handling the swarms to not convey the contagion.

MICHIGAN, No. 62. The serious English sparrow pest from Europe is figured, both male and female head, by Mr. Cook, that it may not be mistaken for several of our friendly songsters. Of the many methods of destruction tested the best seems to be by poison. Wheat soaked in a solution of strychnine—one dram to a quart of water—is effective but too rapid, as the birds fall before flying away, and prevent others from coming to the fatal repast. Arsenic in corn meal is better. Much can be done by judicious offering of bounties, and by destroying the nests.

NEW YORK, (Cornell) No. 17, pages 8. Dr. Caldwell gives a description of the Cochran method for the determination of fat in milk. Several methods have been described within the past year in various Station bulletins, most of them depending upon a partial decomposition or solution of some of the milk constituents. The method preferred by Dr. Caldwell, namely, that by O. B. Cochran, is fully described, and does not admit of a brief digest that would be intelligible without the figures of the required apparatus. Five pieces of apparatus, mostly small, and three chemicals, namely, sulphuric acid, acetic acid and ether are required, the whole for two hundred analyses to cost seven dollars. This accurate method of determining the percentage of fat in milk is within the reach of all and especially those in charge of creameries. "Sixty tests can be made in from two to three hours," and the Cornell station offers to instruct persons in this method if they will spend a few days at Ithaca.

OHIO, Vol. 3, No. 3, pages 42. Under experiments with corn, the large dent varieties were found most productive, and flints as a class are not preferable in Ohio. Soft or flour corns are a failure. Of large, yellow dents, the following lead: Leaming, Murdock's Improved, and Woodworth's; of medium large, the Farmers' Favorite. The Hess White is a good sort of large white dent. One inch deep is best in the long run for planting, and the largest yield of marketable grain was where stalks were twelve inches apart. There is no difference in reproductive qualities in grains from butt, middle, or tips of ears; cultivate more frequently in dry than wet season. Of oats, it was found that the White Schœnen, Monarch, and Probsteier gave the highest yield. The proper amount of seed is five to eight pecks. Actinomycosis received full treatment. This "big jaw" or "lump jaw" of cattle is caused by a parasitic fungus growing in the parts affected, and propagates by spores that find entrance to animals through wounds. These spores produce yellowish specks of radiating cells. The animal declines from starvation, as the food can not be masticated. The cure is to cut out the diseased parts if possible, or use caustics.

U. S. DEPT. OF AGRICULTURE. The section of Vegetable Pathology has extracted from its Journal of Mycology a number of practical papers and issued them separately under the title "Treatment of Plant Diseases" (24 pages). Professor Smith, who has made a special study of the peach yellows for the past three years, states that, while the obscure and very fatal disease is not yet fully known, he considers it wise to treat all affected trees as worthless, and "the sooner they are converted into stove wood the sooner new, healthy trees can be grown in their places. Dig out, then, and burn, and do it promptly." In some portions of the famous "peach belt" of Michigan, where this method has been practiced, peaches are still grown successfully. Smut in grain can be much diminished by treating the seed, whether of wheat, barley, or oats, to a hot water bath. Dip the grain in water heated to 135° F. for a few minutes. This is known as the Jensen method, and is a more effective treatment than by the blue-stone (sulphate of copper) solution.

FARMING IN FOREIGN LANDS.

Nearly 200,000 sheep are estimated to have been swept away during the recent floods in New South Wales.

Australian journals are agitating the subject of introducing the culture of the castor-oil plant into the agriculture of those colonies.

Quite a sensation has been created in South Africa by the arrival of a pair of diminutive Shetland ponies at Germston, where they were driven to a pony phaeton.

It is claimed that such improvements have been made in the quality of tobacco grown in India that the cigars made there are second only to the best Vuelta Abajo of Cuba.

Sweden, which leads the world in dairying, is buying quite largely of Ayrshire cattle to add to the Swedish herds. Dark brown and white are the favorite colors with them.

The great German national horse show at Berlin, June 12 to 22d, was a pronounced success. The entries numbered 1,600, including 450 which were entered for driving and riding.

The colonial legislature of New Zealand is expected to enact a measure consolidating the laws relating to sheep and containing new provisions concerning the treatment of scab.

The total area devoted to wheat in India is estimated at 26,000,000 acres, and the average annual yield at 7,072,000 tons, of which the exportable surplus is from one-eighth to one-sixth.

It is officially reported that the government horse-breeding department of India has found Norfolk trotter stallions far superior to thoroughbreds for breeding purposes in that country.

Decided steps have been taken by English breeders of Dorset horned sheep to establish a flock-book for this breed. At a recent meeting in Taunton, a committee was appointed to arrange the preliminary details.

A recent government report states that at the close of 1889 there were 108 cotton mills at work in India. They contained 22,156 looms, 2,669,922 spindles, and worked up 347,000,000 pounds of cotton during the year, employing 42,126 men, women and children.

According to a recent report of the Austrian Minister of Agriculture, there are now 490 government horse-breeding establishments in Austria. They are served by 1,980 stallions, including sixty-nine English thoroughbreds, 243 Norfolk hackneys, and 749 half-bloods.

The steel rails on the railroad near Hagen, Germany, have been honey-combed by a thread-like gray worm which has a powerfully corrosive secretion that softens the steel so the insects can eat it. This fact is vouched for by a government report in the Cologne *Gazette*.

The Suffolk Sheep Society, of England, has issued its fourth volume of the Suffolk Flock-Book. It contains the records of 351 rams, numbered from 873 to 1,224. There are many other valuable features of the book, including handsome illustrations of typical specimens, scale of points, etc.

In Ireland steps are on foot to have the legality of of dishorning cattle tested in the courts. A dishorning defense association has been organized in Dublin, and a prosecution instituted against a farmer who cut the horns from his cattle. The case being considered a test will be carried to the last resort.

Agricultural progress has been very rapid in the Argentine Republic during the last decade. The area under cultivation ten years ago was 988,400 acres; it is now 7,313,000 acres. The present harvests are reported to be immense, but the railway facilities are wholly inadequate for moving the crops.

The wheat crop of the present year is the largest ever harvested in Australia, New Zealand, and Tasmania. Yields of wheat are reported of fifty to seventy bushels per acre, and oats of seventy to one hundred bushels per acre. On one farm, two hundred acres of wheat averaged fifty-five bushels per acre.

Peruvian farmers plow only three inches deep, using a crooked stick much like the plow of Bible times. Six to twelve pairs of oxen are hitched to each plow from a heavy beam tied directly across their foreheads. It is only by irrigating with water rich in plant food that they succeed in getting fair crops.

Prof. E. M. Shelton, recently of the Kansas Experiment Station, has entered upon his work as Instructor in Agriculture of Queensland, Australia. The work will be carried on by means of special instruction, lectures, and conferences on the plan of the Farmers' Institutes which have proved so successful in the United States.

At the recent fat-stock show in Berlin the exhibitors from Schleswig-Holstein achieved great success, winning the lion's share of first prizes. Those exhibitors represented the General Association of Agriculture at Kiel, which has pursued for many years a system of improving their beef stock by importations of English Shorthorns.

The climate in the province of Buenos Ayres, Argentine Republic, has proven too damp for the successful raising of merinos. Thousands of these sheep have perished during the past winter through diseases from this cause. Long-wooled sheep, however, especially Lincolns, thrive well in that country, where they obtain excellent pasturage.

At the recent Essex County Show, in Chelmsford, England, the Prince of Wales was in attendance and took a lively interest. The hackney stallion, Sun of York, owned and bred by the Prince, took the first premium for his class. The prince described himself as a practical farmer, and was highly gratified with his success as an exhibitor.

Kimberley, which has hitherto been known to the world as the center of the South African diamond industry, was recently the scene of a grand agricultural and live-stock show. The exhibition was highly successful; the city fluttered everywhere with bunting; the governor of the colony was present, and 25,000 people were in attendance.

The importation and employment of American oleo and neutral oil to France is having an unfavorable effect on Normandy butter in the English markets. The fraudulent stuff is extensively made in Caen, in the face of special laws to check it. During five years the export of Normandy butter has fallen off at the rate of 32,000 francs worth per year.

Mr. H. Fredericks, a Tasmanian dairyman, has adopted a novel method of cooling his dairy-house. He runs a stream of cold water on the house, by means of a pipe, dispersing it over the roof, whence it runs off into the gutters, keeping a low temperature in the hottest days. This system might be adapted to any dairy-house where there is a spring of sufficient head, or a windmill and pump.

The trade in frozen mutton from Australasia and South America to England has grown with great strides. Ten years ago only 400 carcasses were sent from Australia; in 1889 the shipments from there were 699,992. New Zealand, which first entered the trade in 1882 had shipped 4,464,172 carcasses at the close of 1889. In the New Zealand and Australian trade there are thirty-four steamers with a capacity of 703,000 carcasses; in the Rio Plate trade, twenty-seven steamers carrying 592,000.

On account of the enormous taxes and duties levied on the producers and exporters of China tea, this commodity, to meet the competition of Indian teas of the same quality in England, must be sold at great loss. China tea-growers are greatly discouraged, and are becoming careless as to the quality of their crop. Thus Indian tea is rapidly supplanting that of China in English markets. The Chinese are, therefore, urging their government to take off the burdens on this industry.

The wine production of France in 1889 amounted to 510,919,200 gallons, which was 151,316,000 less than the average crop for the last ten years. The falling-off was caused principally by the ravages of phylloxera; but an official report of M. E. Tisserand shows that a successful fight is being conducted against it in all parts of the country, and that there is good reason for believing that in the near future the produce of the vineyards will be as abundant as ever.

The recent introduction of American vines in Victoria, upon which to graft European varieties, under the impression that the American stock possessed roots so tough and fibrous that the phylloxera could not live upon them, has proved unsatisfactory. The insect appears to spread as rapidly on these vines as on the European varieties, and action has been recently taken by the Rutherglen Vinegrowers' Association to pull up and burn all American vines planted in the grounds of the Viticulture College, and also in those of private growers.

The sale of the entire Devon herd of the late Lord Falmouth, which occurred a few weeks ago at Tregothnan House, England, was one of the most notable sales of Devon cattle ever reported. The sale included fifty-six cows with eighteen calves at foot, and twelve bulls, of which five were yearlings. The highest price was $1,365 for the cow Blooming Heather, and the entire herd of eighty-six, old and young, averaged $365.62 per head. This is said to be the highest single sale, and the highest average ever obtained for Devon cattle in England.

An important convention of flour millers will be held at Santiago, Chili, in September, attended by an exhibition of milling machinery, under the auspices of the Society for the Promotion of Manufactures. Exhibits are solicited from all over the world, especially from Europe and the United States, and the society will pay the expenses of the necessary mechanics to erect and operate each mill from these two countries, as well as the freight of the machinery and the expenses of the mechanics back, provided they return within one year. The mill which will be adjudged the best is to receive a prize of $3600.

An important decision in regard to selling cows under warranty was recently given in the Bolton county court in England. Two dairymen, having bought of a local farmer two cows which failed to calve upon certain dates, as guaranteed, sued the vendor for the keep of the animals up to said dates. It was decided that, as the plaintiffs did not take advantage of the law which would have authorized them to return the animals as soon as they discovered the warranty to be broken, or to offer them for sale in case the vendor refused to take them back (according to the customary chattel warranty practice), they could not now recover.

A decided movement has been started in England to encourage greater skill in horse-shoeing. A meeting in pursuance of this was held in London, under the auspices of the Farriers' Company, the Royal Agricultural Society, and the Royal College of Veterinary Surgeons, with the Lord Mayor in the chair. A scheme was launched to provide technical education for shoeing-smiths, and maintain a registry of those who proved upon examination to be properly qualified. Such as hold certificates will alone have the right to use the letters R. S. S.(registered shoeing-smith) after their names. Subscriptions amounting to $6,500 were announced at the meeting.

Sisal-hemp culture is making marvelous progress in the Bahamas. Capitalists from Great Britain, Canada, and Newfoundland bought 120,000 acres of government land last year, and are putting it into sisal, but the government has declined to sell more land at present. Unimproved private lands can be bought for from $8 to $12 per acre. It is believed that in a short time the exports, which now average about $600,000, will run up into the millions. Sisal plants are in great demand, and the price has advanced from six to thirty-six cents per dozen. A plantation once started needs no replanting for several years. Quantities of old plants have lately been discovered on some of the Florida keys, which suggests a trial of the hemp industry in Southern Florida.

Notwithstanding the fact that, through the recent collapse of other occupations and industries, fully two hundred millions of the population of India are dependent on agriculture alone, this occupation is in an extremely depressed state. The soil is so exhausted that the out turn therefrom is miserably small, one acre of grain yielding on an average not more than ten bushels. Then, too, on account of the annual loss of over twelve millions of cattle from disease and starvation, and the slaughter of some three millions to supply beef, hides and skins, plow bullocks are so scarce (averaging hardly one pair for thirteen cropped acres in all India) that thousands of acres of land all over the country lie uncultivated for this reason alone. To remedy this condition of affairs, a strong society for the preservation of horned cattle has been organized. But this immense annual loss of cattle has a more serious effect in the fact that India is thus obliged to import dairy produce from Asiatic countries for her domestic consumption, thus raising the price of such produce beyond the means of the poorer classes. To this cause is attributed the high annual death rate among young children, which constitutes fully one-half the total mortality throughout all India.

OUR BASKET.

Black Ants.—P. T. S., Baltimore, Md.: We do not know of anything that will drive away the large black ants so troublesome in your kitchen. But they may be caught and killed by setting traps baited with sweets and poisons. The poisons used should be nearly or quite tasteless, like London purple, Paris green, and Fowler's solution of arsenic. These may be mixed in minute quantities with sirup, bits of sweet cake, or similar food for ants, but it must be renewed often, and the traps shifted from place to place about the house, for the ants are so wise that the live ones soon discover the fate of their dead comrades and seek food elswhere. Small species of ants are readily caught in a sponge wet with sweetened water and, when the sponge is well filled with ants drop it in hot water, then wash and wring out nearly dry and set it again.

The European Walnut.—Subscriber, Nyack, N. Y.: The European walnut trees which have proved to be so very tender in your grounds were probably raised from nuts imported from southern Europe and from a warm country, but trees grown from nuts imported from the north of France or England are usually quite hardy, at least in the southern counties of New York State. There are many very old and bearing European walnut trees in this city and its suburbs, and if the nuts from these were saved for planting, a hardy lot of seedlings would be obtained without the trouble or risk of importing them. It is by such means as securing nuts from acclimated trees for planting that we must look for hardy varieties for cultivation in our Northern States. By pursuing this course for a few generations we would, no doubt, produce a race of European walnut trees fully as hardy as our native butternut.

Scorpions, etc.—S. McCall, N. Y.: We do not know whether scorpions, tarantulas, and centipedes are found in the Sacramento valley of California or not, but they are found in the more southern parts of the State, and eastward to Texas. The little California scorpion (*Buttrus hirsutus*) will sting but is not as poisonous as the honey bee, and the same is true of the Texas scorpion. In the tropics there are some very large species of the scorpion but their sting is rarely fatal. Our largest species of the tarantula and centipede do not usually invade dwelling houses or molest the people who live in the regions where they abound, but they will bite when defending themselves against their enemies whether man or beast. The bite of the centipede is dangerous, still we rarely hear of any one being injured by them.

Lime on Hops.—H. C. Knoop, Yuba Co., Cal.: We should not advise baring the roots of hops for a direct application of air-slaked lime. But if the lime is applied to the soil, above the roots, it can do no harm, if it does not benefit the hops. The best time to apply it, in your section, is in autumn, so the winter rains will help to incorporate it with the soil.

Cut-Worms.—L. R. Armstrong, Brulé Co., So. Dakota: There are a large number of species of what are called cut-worms, all of which are the larvæ or caterpillars of night-flying moths. The female moths deposit their eggs on the stems of weeds and other, plants near the ground, and usually in fields and gardens where there will be plenty of food for the young caterpillars when the eggs hatch out, which is usually during the latter part of summer. The caterpillars may be one-half to two-thirds grown at the approach of cold weather when they retire below ground and remain dormant during the winter. In early spring they appear with the young tender plants, cutting off corn, cabbages, tomatoes, in fact, they are very general feeders, and nothing in the way of green succulent vegetation comes amiss with these pests. When these caterpillars are full grown in June and July they descend some distance below the surface and there change to chrysalids, and a month later come forth again in the moth form and repeat the process of egg-laying. From this brief sketch of the lives of these insects it will be seen that it is neither wet nor dry weather that makes cut-worms abundant in Dakota or elsewhere. We do not know of any better way to check the ravages and increase of this pest than to search the hills of corn and other cultivated plants and kill all the worms found. As they hide under the surface of the ground during the day, coming out to feed at night, they are not readily captured except by looking for them where they hide near the plants upon which they feed.

Shoeing Horses.—Robert C. Hazard, Harford Co., Md.: A heavy horse-shoe, tapped for renewable calks, and designed to be left for months together on the horse's foot, is worse than worthless. The lighter the shoe the better, provided it is sufficient to protect the horse's hoof. There is no need whatever for calks on the farm or country roads, except when they are frozen and slippery. No horse should wear a shoe more than four weeks without resetting, or the hoof will grow out of shape.

Farm of Four Acres.—"Capensis," Faulk Co., N. D.: To keep two horses, a cow, and a calf the year round on four acres will require soiling and silage. Winter rye to be cut early in spring and successively, with red clover, corn, and an occasional summer crop of German millet cut while in blossom, will supply the soiling crops. Corn, of the large Southern variety, with what is left of the soiling crops will furnish the silage. A small patch of carrots will also be useful. But with all these, it will be necessary to buy oats, bran, and a little oil-cake.

Arsenites.—Thomas Guthrie, Argentine Republic, S. A.: Paris green is an aceto-arsenite of copper. The commercial article contains from forty to fifty per cent of arsenic, twenty-five to thirty per cent oxide of copper, and eight per cent of sulphuric acid. London purple is an arsenite of lime. It is a by-product obtained in aniline manufacture. It contains about the same average amount of arsenic as Paris green, from twenty to twenty-eight per cent lime, and a trace of sulphuric acid. The remaining constituents of both compounds are water and inert materials.

Black Walnut.—Subscriber, Huntsville, Ala.: To raise black-walnut trees, gather the nuts when fully ripe this fall and plant them in rows, dropping a nut every six inches, covering two or three inches deep. If the soil is light and very rich, the seedlings will produce a larger number of fibrous roots than if planted on a heavy clay or loam. When the seedlings are one year old dig up and cut away about one-half the length of the tap-root and then replant in nursery rows, placing the plants about two feet apart in the rows, and the rows should be at least four feet apart to admit of cultivating the trees with plow and cultivator. When the trees have reached a height of from four to six feet dig up and plant them where wanted around your farm. But we would not advise any one to plant black-walnut trees in Alabama where he can just as well raise English walnuts and European chestnuts, which in a few years would yield an annual crop of nuts worth more than mature black-walnut trees.

A Precocious Potato.—Mr. L. Bowman, Lorain Co., Ohio, sends us a sprouted cutting of a new variety of potato which originated with him. He writes that in 1889 he planted potatoes of this variety June 11th, and the crop was ripe and dug August 24th,—a period of only eighty days. The sprout upon the specimen received at this office is three inches long, and he writes that it is the growth of only seven days.

Calculating Horse Power of Water Falls.—Geo. Catlack, Douglass Co., Ore.: Stated in the shortest possible manner the rule will be, the number of pounds of water per minute multiplied by the vertical distance which it falls divided by 33,000 will equal the horse power. The rule is simple, but it is rather a complex matter to find the number of pounds of water per minute. The rule put in a more practical form becomes this. Compute the power of a stream by finding first the area of its cross section. Then find the distance it flows per minute. Multiply these together, which gives the number of cubic feet per minute. Multiply this by 62½, the weight of one cubic foot of water, which will give the total number of pounds and then divide by 33,000 and this will give the horse power. In engineering terms a horse power is thirty-three thousand (33,000) pounds lifted one foot high in one minute, or conversely the fall of 33,000 pounds one foot per minute is supposed to be equivalent to one horse power. As ordinary water wheels do not utilize nearly all the power of the water it is safe to allow, at least, one-fourth as loss. Probably the rough estimate made by one not familiar with making estimates of the kind would be fully one-third too high. There are considerable difficulties in getting at the exact cross section of a stream. And it is by no means easy to measure with any considerable degree of accuracy the velocity with which the whole body of water is moving.

Black Stain for Wood.—C. H. Stordock, Winnebago Co., Ills.: To stain *any* kind of wood "all through" is not always possible. The reason can be easily understood when we consider that the harder woods like maple, oak, beech, and the softer kinds like chestnut and pitch-pine are absolutely impervious except in very thin layers. Now, unless the liquid of which the stain is composed can penetrate, it is useless to hope to color the body of the wood. The failure to stain maple more than one-sixteenth of an inch in depth is due to the fact that the maple will not allow any liquid to penetrate more than that depth unless it be soaked until the whole substance has become water-logged. The recipe can not be blamed for the character of the wood itself. The remedy is to change the character of the wood to be operated on. Basswood, cottonwood, poplar, and some kinds of birch allow liquids to strike very deeply. These woods are consequently good for staining. The chemicals penetrate deeply and a good color of considerable depth is easily obtained. In establishments where rather thick veneers are dyed it is necessary with many kinds of wood to apply heat and actually boil the dye into the body of the wood to secure a penetration of even a fraction of an inch.

Weather Signals from Trains.—A. Alexander, Ontario, Canada: We think the idea of signaling weather forecasts from trains originated in this country. We know that early in 1883 one of the railroads running south from Cleveland, Ohio, carried signals on their trains which could be seen a long distance, and by means of these signals the "probable weather" forecasts were indicated along the line. The signals were the same as those in use at the present time by the United States Weather Bureau at all its signal stations. Probably a note addressed to the chief of the Signal Service Bureau at Washington, D. C. would bring further information upon the subject.

The Sheet Anchor of American Sheep Husbandry.—As sure as one and one are two the sheep for the farmers is one combining in a high degree a good mature carcass at two years old and a fleece of clean, strong, lively wool that will weigh ten pounds or more. Men with such sheep have not been complaining of hard times during the last five years. Nor are such sheep hard to find by any means. Good sheep, good pastures, good breeding, good management in good hands have less competition than the opposite kind of sheep and care given. The ordinary wool-grower wants to heed this. He has need of getting outside, above the class he complains of. It is better beyond where the best products are offered in the markets. Mutton-sheep raisers want all they can get for their wool as well as mutton, but mutton-raisers say least. There has been a rainbow in sight all the time for them. Look up Brother wool-growers, look up.

R. M. BELL, Illinois.

Electric Motors for General Purposes.—Ira E. Heffner, Bedford Co., Pa.: In the present state of electric science electric motors can not take the place of the steam engine for originating power. Given a supply of electricity, the motor can be used for all sorts of purposes, and can be applied to almost as many uses as a steam engine. But to obtain the electricity cheaply we must have power of some kind. There must be a waterfall, or a steam engine, a tide mill or a wind mill to produce the power in the first place. By this power a dy-

namo can be driven and this gives the electricity for driving motors. In speaking of the steam engine we never forget the boiler which has to produce steam for it. Electricity is the driving power of the electric motor as steam is of the steam engine. As a consequence the motor's usefulness is limited to such places as are within the reach of an electric supply. By means of wires it is possible to convey electricity to motors over a distance of some miles from a central station where it is generated. The distance, however, is comparatively limited. The use of the electric motor can not be considered applicable to all purposes until some means has been discovered for producing electricity as directly from coal as we now produce steam from a boiler by burning coal beneath it. At present we have first to produce power, by means of a dynamo, generate our electricity, then transmit it by wires to the motor which transforms the electricity again into power and so does our work. The economy or the reason for this double transformation is found in the ease with which the transmission is accomplished. Instead of costly and cumbersome shafting, belting, or ropes only moderate sized wires are needed. Instead of being limited to short distances and to fixed locations the wires give great freedom for the change of location and the distances covered may be several miles.

Water for Hogs.—It is highly important at all times, but especially in warm weather, to give swine an ample supply of pure water for wallowing in and drinking. To drive them to filthy mud holes is to invite disease. It is not safe, however, to give them access to a running stream, for the water may be charged with the germs of hog cholera from infected herds farther up the stream.

Shade for Stock.—Cattle and horses of all ages, while at pasture in summer, need some sort of shade to which they can retreat for refuge against the scorching rays of a midday sun. A few great spreading elms or maples afford a grateful shade, and, where such are standing in a lot, it is better to leave them standing, even at the cost of a little less luxuriant growth of grass, than to cut them down. Where there are no trees, a cheap shed, covered with boards, or even with brush, may be put up for the purpose.

Seeding to Grass.—L. P. Bailey, Hancock Co., Ill.: Better sow the grass seed as soon as the soil and weather are right, and then seed to clover early next spring, rather than leave the ground unseeded with a view of seeding it with oats, timothy and clover in the spring. The grass seed will get a start this year if sown any time from the 20th of August to the 20th of September. The clover seed may be sown early in spring, even before the snow is gone.

Vermont Horse-Breeders.—The annual meeting of the Vermont Road and Trotting-Horse Breeders is to be held at Rutland, August 26 to 28. These meetings bring together the finest exhibition of useful road horses to be seen in the United States. The coming meeting will be a notable one.

"Shall I Put Lime and Phosphate on the Same Field?"—W. C. Chapman, Oxford Co., Me: There is no objection to this provided you do not mix the lime with the phosphate before sowing. We take it for granted that by "phosphate" you mean superphosphate. If you mix lime with superphosphate it will convert the soluble phosphate back again into the insoluble form. This occurs in any case in the soil, but it does not occur till the soluble phosphate is dissolved and distributed through the soil.

How to Apply Nitrate of Soda.—E. L. Becker, Ontario Co., N. Y., asks us half a dozen questions about nitrate of soda: 1st. "Would you sow it on clover and timothy?" As a rule, no. It will seldom pay on such a crop. Clover does not need it. "Will a 'plaster sower' sow it?" Certainly; and when plaster is cheap it is a good plan to mix plaster with the nitrate, say half and half. Nitrate of soda looks very like common salt, and it is as easily sown as common salt, or plaster, or superphosphate. But it is a costly article and a powerful fertilizer, and should be applied with economy and good judgment. "If you use it with oats or barley, do you sow it with the grain, as we do other fertilizers?" Yes. "Would it be more beneficial if mixed with superphosphate?" Nitrate should never be sown without superphosphate unless you have good reason to believe that there is no lack of available phosphates in the land. On land where phosphates have been used for years, nitrate alone would be likely to give a good crop for one season. "Would it be well for me to use it on small parts of my crops to find out what it will do on my soil." No doubt; but "the soil" has far less to do with it than the condition of the soil, its previous cropping and manuring, the season, and the crop to which it is applied. This view of the subject is often overlooked.

Feed or Breed.—"A disgusted purchaser" of pure-bred butter cows at high prices asks: "Is not feed more important than breed?" Both are important for large yield of butter or for large yield of any other product. The improved breeds have been so long bred to develop aptitude for quality and quantity of beef that it would be squandering money to feed such animals highly for butter. The fat would be put in the carcass rather than in the pail. But, without liberal feeding, neither beef nor milk can be produced in paying quantity, no matter how long either of these special aptitudes have been bred for. If beef is required, choose the beef breeds; if butter, the cows that give the most butter. The best bred stock is none too good for the farmer and breeder. Breed and feed.

Managing a Bull.—J. K. Briggs, Kalamazoo Co., Mich., asks how to manage a dangerous Jersey bull. We can not do better than to refer Mr. Briggs to Col. F. D. Curtis's article entitled "Common Sense and the Bull," in the AMERICAN AGRICULTURIST for June, 1890. This excellent article covers the entire ground in a most thorough and practical manner, so that we could not add any suggestion of importance to the solution of the difficult problem.

How to Produce Good Veal.—If milk only is fed to calves, the veal will present a white, desirable color. Beaten eggs, to finish off with, may be mixed in warm milk. From four to six eggs night and morning should be fed for a week or ten days. This improves the quality and solidity of veal. Two months is the best age for veal, and less than six weeks old veal is not good. Calves two months old, fed as indicated, on milk, make large, white veal, and the meat is not laxative. When the vessels of the eye are of a light rose color in veal calves, the meat will be white. But when red, the veal will be red, and the fat tinged and unsightly. Veal too young is soft and sticky to handle.

Escutcheon.—Mr. Adolph Munn, Mitchell Co., Iowa, asks: "What is the true value of the milk mirror?" There is great diversity of opinion on the subject. The divisions, classes, and sub-classes of Guenon are too complicated and unreliable for practical guidance. Reduced to perfect, good, fair and bad escutcheons would be less complex and more satisfactory. Select a cow of good size, having the sum total of qualities embraced in the milk-form, color, and mellowness of skin, crumpled horns, good udder, large teats, body wedge shaped, with deep hind quarters, capacity to stow away food, to digest and assimilate it, thin, drooping neck, small, bony head, large, kindly, lustrous eyes, deep chest, sound constitution, and well-developed milk veins, and all the milk mirror you can see, and you will have a paying cow if you give her kind care and generous feeding. But, as in the racer or trotter, satisfaction is only complete in trial tests. Form goes a good way to the eye, but a secured test and first-class record is proof positive of real excellence.

Jerusalem Artichokes as Food for Stock.—H Baldwin, Queens Co., N. Y., writes us that, as a profitable crop on light, poor soils, he has found no product so remunerative as the Jerusalem artichoke. On a poor, orchard soil, the first year the average yield per hill of three plants was seven pounds. Some bunches of roots weighed from four to eight pounds, with but one hoeing. Along the fences overgrown with briers, brambles, and wild cherry brush, on the 9th of February, 1890, the roots were planted, and over them was thrown a small forkful of coarse litter. The plants are thrifty and promise to yield a more wholesome and profitable crop than the briers and bushes which kept encroaching upon the adjacent fields. The tubers planted in the orchard in May, 1889, without cultivation, are large, and the yield will reach at the rate of ten tons per acre. It is expected that from twenty to thirty tons will be realized. There is no crop so certain, as no insect or blight attacks it, and none so valuable for milch cows. The Jerusalem artichoke contains more sugar than the beet, or mangel, and no unpleasant flavor is imparted to the milk.

Large Potato Crop in Florida.—Mr. B. M. Burdett, Orange Co., Fla., sends us fine samples of the Beauty of Hebron potato, of which he says he has raised 726 bushels to the acre, and that without fertilizers of any kind. The soil on which they were raised consists of dark, vegetable matter, from two to ten feet deep, underlaid with hard sand. The seed was planted in rows three and a half feet apart, and one foot apart in the rows. The sets were cut to one or two eyes, and covered with three inches of soil, and when the growth was about ten inches high they were plowed and hilled. In ninety days they were matured for digging.

Inbreeding Fowls.—Mr. Peter Seck, Jackson Co., Mo.: Fowls suffer from inbreeding sooner than most other animals. We can not advise long and close inbreeding in any class of domestic animals. Animals in the wild state are preserved by the natural laws and instinct from rapid degeneration. The healthiest males protect and propagate the species. This is eminently the case in wild horses, wild cattle, wild hogs, and all other wild animals. In this way sick, feeble, delicate, deformed, or diseased wild animals seldom procreate their species. We think that every breed of domestic animals long inbred has delicacy, lack of size, strength and prepotency. The thoroughbred horses and cattle of all our herds conclusively prove this. Great care and caution must be observed in all cases of in-and-inbreeding.

Color of Chicks and Young Animals.—Miss Delia Jerrold, Erie Co., N. Y., desires information on the color of newly-hatched Langshan chicks, having procured eggs from three different sources, and wishing to breed only from the purest stock. All of the chicks of the first, all those of the second, and a part of the last breed have white markings about neck, breast, and wings. All pure Langshan chicks have white marks as above. Therefore, discard all those of the last sitting, as those with white may also be impure. The color of young animals for some time after birth differs from the pure-bred parents. This is often observed in colts. Foals often have a buckskin color, which finally becomes a rich, dark bay. The Chillingham white cattle throw red calves, and this is the case with the little Irish black cattle.

The Melon Beetle.—M. S. Giles, Lancaster Co., Pa.: The small, roundish beetle, with yellow wing covers, ornamented with black dots, which you find eating the leaves of your melon vines is the *Epilachna borealis* or Northern Epilachna. You say that it looks like a large Lady-beetle, but, as you have heard it said that the Lady-beetles or Lady-bugs live on plant lice and other small insects, you suppose that the one eating your melon vines must belong to some other tribe. We regret to say that this pest of the melons does really belong to that very large and respectable family known as the Lady-beetle family (*coccinellidæ*). But the Epilachnas, of which we have three species, are the black sheep of the family, and this northern one is often a great pest in our gardens, for it begins its depredations in spring by eating the leaves of muskmelons, and closes the season by peeling the rind from our best watermelons. We do not know of any better remedy than hand-picking, and, if we begin this work in spring, the late broods will be far less numerous and destructive.

Sycamore.—Subscriber, Nanuet, N. Y.: Your sycamore or buttonwood trees are attacked by the same species of blight which was very prevalent and destructive to these trees nearly or quite a half century ago. At that time it spread all over the country, attacking both the young and old trees, destroying many of the old ones, but some of them and the young and thrifty survived. We have noticed the reappearance of the blight in many localities this season, and it will probably continue its ravages for several years. The fungus attacking these trees, although a very minute species, has a very high-sounding name, viz., *Gliosporum nervisequum*.

AMERICAN AGRICULTURIST
FOUNDED IN 1842
AUGUST, 1890.

Does Fruit-Growing Pay?

Fruit-growing as a whole is, without doubt, a profitable occupation; yet the majority of farmers who engage in it are probably disappointed because their expectations have been placed so high that the result must necessarily fall below their hopes. Estimates for future profits are often based upon prices received in the home market for fruits brought from a distance. Especially is this true regarding small fruits. The grower naturally reasons that his home-grown fruit will go into the market in so much better condition than that which is shipped from a distance that it will bring quite as good a price, even if somewhat later in season. But by the time his plants are grown and the fruit is ready for market the conditions may have changed. Some other grower, not so very far away, may have found the excellent opening offered by the same market, and is there as a competitor. His neighbors have been inspired by the same idea at about the same time, and are hardly a season behind him with their products. Or his first crops, owing to imperfect methods of cultivation and handling, knowledge of which can only be obtained by experience, have failed to come up to the high standard of his hopes. These drawbacks may lead him to the conclusion, if he is a man easily discouraged, that fruit-growing is not profitable. Yet, with all these discouragements, it is strongly probable that his trial acre of strawberries, or currants, or blackberries has paid a better net profit than any possible acre of wheat, or corn, or meadow. If the acre of fruit has not made a fortune, it has at least indicated the road to a better income. If the crop was strawberries, the experience gained will enable one to duplicate it to better advantage, with a better knowledge of the most desirable varieties for his locality. Then another acre may be put in raspberries and blackberries, which will follow the strawberries in the season of harvesting and marketing. One each may be put in currants and gooseberries, which among small fruits best bear shipping, and will enable the cultivator to test the value of other markets after the home trade has been supplied. Plums, cherries, peaches, etc., will follow in their natural order, until the fruit farm, large or small, becomes an accomplished fact, and then, if it is managed as a systematic business, it will be strange indeed if it does not yield a handsome return for the capital and labor invested.

Fruit is every year becoming more plentiful in our markets, and the increased consumption keeps pace with the supply. If this condition forbids great profits to the individual specialist in fruit culture, it improves the chances for the many, and is for the best interest of agriculture at large. It is better that many should be able to acquire a competence than that one should make a fortune, and it is one of the benign influences of our progressive agriculture that we can put within the reach of all classes the most wholesome of foods. Fruits which were once known only as delicacies by the masses are now upon their tables daily in their respective seasons.

As our population increases, farmers all through the great eastern and middle sections of the country cultivate mainly the smaller and more delicate products of the soil. The orchard, the garden, and the dairy will take the place of grain fields; and the farmer who plans to follow this line, content with moderate returns, will not be the one to exclaim that fruit-growing is unprofitable.

Death of a Renowned Horticulturist.

Patrick Barry, the eminent horticulturist, a member of the firm of Ellwanger & Barry, died at his home in Rochester, N. Y., on the 22d of June, at the age of 74. Mr. Barry was the son of a farmer, and was born near Belfast, Ireland, in 1816. He was liberally educated and at the age of eighteen was a teacher in the National schools. In 1836 he resigned his position and came to the United States, where he was soon engaged as a clerk by W. R. Prince, at Flushing, Long Island, a prominent firm in the nursery business. There he laid the foundation of his after success. In 1840 he went to Rochester, and the firm which existed fifty years in ever increasing vigor and fame was then formed. Mr. Barry was a contributor to the AMERICAN AGRICULTURIST for many years. He wrote largely for agricultural and horticultural periodicals. He was editor of the *Horticulturist*, after the death of A. J. Downing, and during the period when that journal was owned by James Vick, and published in Rochester. This was in 1852, and for several years subsequent, until the publication office was transferred to Philadelphia. He was at one time the horticultural editor of the *Genesee Farmer*. In 1852 he published "The Fruit Garden," a standard work on the raising and management of fruit trees, and fruit-growing in all its various branches. A second edition, revised and enlarged, bringing the work up to the present time, was published in 1885.

His greatest work, however, was the "Catalogue of the American Pomological Society," which is the accepted guide of American fruit-growers, and is high authority with fruit culturists the world over. Mr. Barry for more than thirty years was President of the Western New York Horticultural Society. He was President of the Western New York Agricultural Society and a member of the controlling Board of the New York State Agricultural Experiment Station. Amid all the exacting claims of an immense business, he was frequently called to important civic stations, as alderman, and supervisor, while he was forced to decline many others which the partiality of his townsmen tendered him. Among fiduciary and financial positions held by him were those of President of the Flour City Bank, of Rochester, President of the Company holding the franchises of the surface railroads in that city, President of the Gas Company, of the Powers Hotel Company and of the Mechanics Savings Bank. He was a manager of the Western House of Refuge, and was one of the Commission appointed by the Legislature to supervise the elevation of the tracks of the New York Central railroad through the City of Rochester. These many positions illustrate the confidence of the city, the State and his fellow citizens in the integrity, ability, and profound sagacity of the man. To all of these he brought the enlarged knowledge and capacity which had made his special private undertakings prosperous and distinguished beyond even his most ardent hopes. Mr. Barry was married in 1847 to Miss Harriet Heustis, of Richfield, Otsego county, N. Y. They were the parents of six sons and two daughters, of whom three sons and one daughter survive the father.

Mr. Barry was a man of exceptional force of character and tenacity of purpose. He had grand business capacity and almost unparalleled vigor of body and mind. Of large and commanding frame, he had the physical strength that sustained him bravely in all his many enterprises, until a few weeks before his death. He had an active brain and a cool and wary judgment, with a foresight that seldom failed to correctly estimate the results for which he toiled. The original nursery of seven acres expanded into a vast area covered with the rarest trees, plants and shrubs, native and acclimated, and with millions of fruit trees comprising every variety worthy of cultivation. The fame of the Ellwanger & Barry nurseries is world-wide, and their shining example of thrift, intelligence, industry, and success was the standard of emulation by multitudes engaged in similar undertakings. As a writer Mr. Barry was clear, forcible and thorough. He had a remarkable gift for imparting his knowledge to others, and what he knew so well himself he was only too glad to impart to those who desired encouragement and aid. He was an authority that commanded attention and respect. Mr. Barry accumulated wealth and made good use of it in promoting the business interests of the city in which he lived, furthering all solid schemes of improvement, and in the exercise of a discriminating and liberal charity. He was in all respects a noble example of a man who by the simple honesty and goodness of his nature, by steady industry, by the intelligent co-operation of physical and mental forces, rose to eminence and wealth, and the universal esteem of the people among whom his lot was cast. He wisely chose the United States for the scene of his manhood's career and here he found a reward more generous and more expanded than he could have hoped for in the land of his birth. Mr. Barry's character was made symmetrical by religious faith and hope. Born in the communion of the Roman Catholic church, he lived a devout life, exemplary in every relation, tolerant, charitable with generous sympathies and unswerving fidelity to duty. His heart was ever open to an appeal for advice or aid, and these were given cheerfully and with quickened sympathy. His memory will be cherished and revered by all within the circle of personal and official relationship, and by that wider circle of those who had been instructed and improved by his experience and knowledge. An excellent portrait of Mr. Barry was published in the November, 1887, number of the AMERICAN AGRICULTURIST.

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"STATE OF NEW YORK, ASSEMBLY CHAMBER, ALBANY, Jan. 16, 1890.

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ANIMAL AILMENTS.

Cough in an Old Horse.—Decatur Holbert, Wayne Co., Pa.: For a horse twenty-two years that has a cough like that of a horse having heaves, dampen all the feed both hay and grain. Ground feed in which a small handful of whole flaxseed is added to every grain feed will be better than all the medicines in the long catalogue of remedies.

Pulse of Animals.—Frequent inquiries as to the number of beats of the heart of healthy animals are from time to time made from different sections of the country. The pulse of full grown cattle ranges from 45 to 50 beats per minute; in the sheep from 70 to 80; in the hog from 70 to 80; horse, 36 to 40; ass, 46 to 49. The normal pulse is more rapid in young animals, inversely with age. In old age the pulse decreases in frequency.

Thrush.—Mr. G. F. M., San Leandro, Cal., desires to know how to cure thrush of long standing. Thoroughly cleanse the horse's foot or feet with castile soap and water in which a teaspoonful of crude or ten drops of strong carbolic acid is dissolved; dry and powder with fuller's earth. Keep the stable dry. Before using the horse, rub in the sore surface vaseline, to prevent cracking. A reasonable perseverance in this treatment should make a permanent cure.

A Leaky Cow.—J. J. Holmes, Bristol Co., R. I.: The habit of leaking milk is caused by weakness of the sphincter, and is difficult to cure while the cow is in full flow of milk. Various expedients are tried, with more or less success. One of these is to coat the end of the teat with collodion immediately after each milking. Another is to constrict it by a small rubber band near the lower end. The insertion of a plug is not advisable, as it renders the difficulty more permanent than before.

Lameness in a Colt.—George T. Woodward, Quebec, Canada, has a lame colt and the veterinary surgeon does not like to puncture a swelling in center of the heel of the forefoot, where it is suspected a thorn or sliver may have been broken off in it. He had poulticed and blistered to no purpose. Let the colt run to pasture days, and at night use tincture of iodine freely all around the foot above the hoof up to the fetlock. Apply a flannel bandage, and only remove it at night to apply the iodine. If the lump gets soft let the vet. open it.

Fatty Degeneration in Hens.—Mrs. Lucretia Overton, Rock Co., Wis., has lost a number of two, three, and four years old hens, and wishes to know how to prevent the fatality in her flock of fowls. Old fowls are subject to fatty degeneration of the liver and heart. They become dull and stupid. If chased, they stagger and submit to be caught. Age seems to favor these ailments. Feed less fattening foods. Boiled potatoes and artichokes once daily is an excellent diet for fowls. But the infallible preventive is to kill and market them before the fowls reach the third summer.

Caustic Potash—Lameness.—C. A. Molin, Des Moines Co., Iowa, asks: 1. "Will caustic potash prevent the growth of horns in calves, and how shall I use it?" No. Do not use it, it is cruel and ineffectual. 2. "What makes cattle eat wood and rags or anything they get hold of?" A depraved appetite. Change food and give a greater variety. 3. "I have a mare that is very lame and has been for a year; her feet are tender and soft. Is it bad or neglected shoeing?" It is probably thrush or founder, or both. Cleanse the feet well, and apply crude carbolic acid on tow or oakum by stuffing at night.

Brittle Hoofs.—Mr. Oliver Pettus Freeman, Polk Co., N. C., has a fine and fast young thoroughbred horse whose hoofs are so brittle that the nails will not hold the shoes. When racing, the nails, one or more, tear out and cut his feet and legs so badly as to make him lose the race, and in consequence is laid up for many days at a time. Having tried nearly everything but the following, we advise, vaseline four ounces mixed with half a pound of glycerine, applied with a swab, after washing the feet with soap and water and drying them. This should be applied every evening for a week and then cleanse the feet with castile soap and water quite warm. The horse should stand on moist clay, and go barefooted. Such horses should not be raced on a hard, dry track. A light shoe fastened with three nails on the outside and only one on the inside, after the treatment indicated, should with good boots enable the horse to run safely. Farm horses, and even those driven on sandy or other soft roads near home, need not wear shoes. There are more lame horses from wearing badly fitted shoes, than from going without them.

Fistula.—M. Steves, B. C., has a fine and valuable mare that had her foot torn or hurt last fall, on the back part of one side of the foot, just above the hoof. It partly healed, when it was again hurt on a wire fence. There is a projection out of the sore about three-fourths of an inch. It must be healed from the bottom. Inject tincture of iodine and apply a folded cloth, and bandage snugly. This will excite some inflammation for a time only, which stimulates healthy granulation. This may, if necessary, be repeated after a week. The protrusion will be removed by a few paintings with tincture of iodine after the healing is complete.

Glanders.—Mr. Joseph Temple, Custer Co., Neb., has a disease in his horse stock on his ranch that has given him great anxiety. Horses affected have an offensive discharge from the nose, swelling on the sides of the jaw and neck, and sores in the nose. The disease is the worst that can be introduced into a horse-breeding ranch. It is glanders, an incurable and infectious disease. Remove all the affected horses. Kill and bury them. So far as possible cleanse and disinfect every stable, stall, and fence. Watch the sound animals, and if they become affected treat as before directed. Consult the best veterinarian. He will tell you the treatment is the best and cheapest.

Possible Hydrophobia.—Mr. James Sherwood, Hamilton Co., Iowa, had a valuable pup sent him from an Eastern friend, of a rare hunting breed, that he would like to keep, but a dog reported to have been "mad" bit a number of dogs in the neighborhood. Though Mr. Sherwood does not know that the mad dog bit his pup, as he passed through the farm, he would like to know the early symptoms of a mad dog so as to guard against danger. We would say that his proposition is more hazardous than playing with a serpent. If he is resolved to keep the pup, place him beyond the reach of human hand, or any animal for six months, and then incur the risk to man and beast thereafter. Every dog bitten even by a mad dog does not become rabid.

A Deaf Cat.—Miss A. C. Marvin, Multnomah Co., Ore., has a white pet cat that can not hear, and her mew is harsh and disagreeable, but she is so neat and affectionate that she wishes she could learn how to cure her deafness. The deafness is doubtless congenital. It is a very common defect with white cats, the whiteness being caused by albinism, in itself a defective condition. Kindness to our domestic animals purifies the heart. Independent of the value of cats in ridding us of destructive vermin, they greet our coming with a subdued song and an affectionate caress. They make the house cheerful and pleasant, and the home one of contentment.

Blue Milk.—Mrs. T. Sinclair, Cuyahoga Co., O., asks the cause of her cow's giving blue milk. There seems to float upon the milk a bluish powdery substance. Also whether the use of the milk is hurtful to young children. This is a fungus, the *oidium lactis* or *penicilium*, which has the power of producing in the milk an aniline-like substance, which is liable to produce gastric irritation and fever in children of a delicate, nervous organization. Milk containing *oidium*, without change of color even, produces dyspepsia, diarrhea and aphthous ulceration of the mouth and tongue, in children of delicate digestive powers. This effect may also come from pus from an injury of the teat. Even if the milk of diseased cows do not prove absolutely deleterious to human health, yet it is disgusting to suspect that the milk consumed may come, or does come from diseased cows. All suspected milk should be boiled.

Founder or Laminitis.—Founder may result from overfeeding, overdriving, exposure to strong cool winds while sweating, hard driving on hard roads, feeding and watering when heated. A young colt after getting loose and gorging itself at the feed-box will, when found, be as stiff as a chest-foundered horse, or one having laminitis. The best treatment is starvation and mild laxatives. Castor oil is especially advisable. According to age, from four ounces to twelve, in which a teaspoon to a tablespoonful of laudanum to allay irritation of the stomach should be added. Feed carrots after the bowels are free. Warm blanketing and hand rubbing, especially of the sides and belly. If the feet and limbs are tender and hot, tincture of aconite, five to ten drops in the water, three or four times a day for one day only. Hand-rubbing the legs, and putting the feet in hot wet bran. In genuine laminitis, tincture of aconite in larger doses, castor oil, glauber salts and sweet spirits of niter should be given with warm water injections containing common salt in solution till a free movement of the bowels is secured. To a full grown horse half a pound of castor oil, repeated in twelve hours; or glauber salts in half pound doses in warm water every three to six hours. Remove the shoes, put the forefeet in hot bran-mash and draw blood from the top of hoof where it joins the hair. Have the horn of the hoof cut so as the weight is borne upon the sole, as the pain, fever and tenderness is located in the laminæ or leaves of the hoof. Carrots, bran-mash, sweet spirits of niter from one ounce to three ounces night and morning, warm blanketing, and frequent hand-rubbing. All draughts should be shut off, and the box-stall should be steamed by putting hot bricks in a pail half full of water. Reduce the fever by two or three doses of from ten to twenty drops in the water which should be frequently given milk-warm. This affection is one of the most frequent causes of permanent injury to driving horses. The treatment to be most successful and satisfactory must be early and perseveringly pursued. It is so serious a trouble, that the veterinarian should be called at once. But never wait for tardy professional medical service, but act promptly, and persevere till the doctor arrives. If he is an educated and sensible man he will commend your well-meant efforts. The quack and pretender is the loud denouncer even of the best treatment you may have given your horse.

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W. B. MUNGER, Blair Co., Pa.

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MRS. GEORGE ALLISON, Rand Co. Ill.

Should be in Every Farmer's Home.—The AMERICAN AGRICULTURIST should be in every farmer's home in the country, as it is the very best agricultural paper printed. I wish the AMERICAN AGRICULTURIST greater success than ever for the year 1890.

BENJAMIN M. HOWE, Spokane Co., Wash.

More Valuable than Any Other Periodical.—I can not find words with which to express my gratitude sufficiently for the valuable advice obtained from the AMERICAN AGRICULTURIST. It is more valuable than any other periodical.

J. E. SCHELL, Cerro Gordo Co., Iowa.

Always Instructive and Interesting.—I beg to express my high appreciation of the AMERICAN AGRICULTURIST. By the aid of this always instructive and interesting magazine I have during the past three years endeavored to plow, harrow and "orchardise," as you so ably instruct, with highly satisfactory results.

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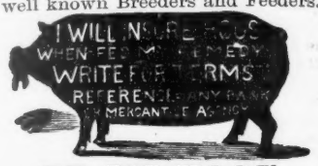

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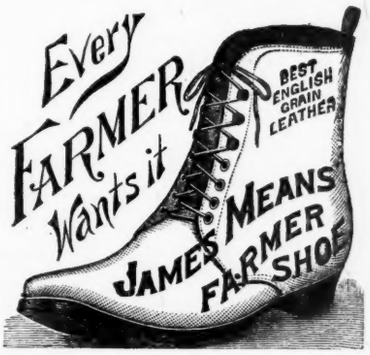

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All you have to do is to tell him that he must supply you with the "James Means' Farmer Shoe," or else you will give your order to another dealer. Tell him that he can buy the goods at wholesale of James Means & Co., Boston, Mass., and that he can make a fair business profit on them after all the freight bills have been paid, even if he is on the borders of the Pacific Ocean. Some of our largest customers are on the Pacific Coast. Tell your retailer that you are tired of buying shoes made of inferior leather. Tell him also that an investment of less than eleven dollars will enable him to carry an assortment of sizes of these goods in his stock. Then if the man has any enterprise he will write to us, and in a week or two he will be able to furnish you with the shoes. If not, please write to us, and we will see that you are supplied with the shoes you need. We originate, while others copy. We lead, while others follow.

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MATTERS OF BUSINESS.

The Crop Outlook.

The statistical report for July, of the Department of Agriculture, shows improvement in the status of cotton, the average of condition having advanced up to July 12 from 88.8 to 91.4 since the previous returns. There was generally an excess of moisture until about June 10, with fine weather since, giving opportunity for destruction of grass and for thorough cultivation. On the Atlantic Coast the crop is generally well advanced, while it is late in the Southwest, where planting was delayed by overflows and by heavy rains. That which was planted early began to bloom from the 15th to the 25th, and in the Southwest some bolls are reported as early as the 20th. While the plant is in various stages of advancement, from the wide range of seeding, it is now almost invariably in full vigor of growth, of good color and high promise, very free from rust, and free from worms except the weak invasions of first broods in the more southern belt. The present average of July condition has been exceeded only once in the last five years. It is stated as follows by States: Virginia, 92; North Carolina, 95; South Carolina, 95; Georgia, 95; Florida, 91; Alabama, 95; Mississippi, 89; Louisiana, 86; Texas, 89; Arkansas, 89; Tennessee, 93. Nearly throughout the cotton area two or three weeks of dry weather is reported, but scarcely any injury from drought. Since the first of July heavy rains have been reported on the Atlantic Coast.

The July winter wheat report of the Department of Agriculture represents the crop as harvested in all but its more northern latitudes. It shows some advance in condition where it was lowest in June, in Michigan, Indiana, Illinois and Missouri, and slight decline in Ohio, Kentucky, the Pacific Coast and in the Southern States. The general average is 76.2, against 78.1 last month, and the reduction is mostly in the non-commercial districts, the commercial supply States taken together making nearly the same average as in June. The spring wheat average has advanced from 91.3 to 94.4. The averages of the principal States are as follows: Wisconsin, 93; Minnesota, 98; Iowa, 95; Nebraska, 88; the Dakotas, 94; Montana, 93; Colorado, 90; Washington, 93. Taken together, the winter and spring wheat makes an average of 82.1, instead of 82.4 last month.

The returns from the South are very unfavorable, indicating scarcely more than half of a full crop. The vitality of the crop was greatly impaired by March frosts. The aphis has been very prevalent on the Atlantic Coast, and saturating rains have been injurious. These causes have produced a shortening of the straw and shriveling of the grain with an unusual prevalence of rust. The fly and chinch bug appeared in some districts. After the injury from frosts that followed the lush growth of a mild winter, the crop fell an easy prey to all the plagues that infest it. A heavy reduction in condition during June is reported in Kentucky. Yield and quality, as tested by the thrasher, are worse than was anticipated, the plants thin on the ground, the heads light, the berry shriveled. Ohio and West Virginia make slight reductions, the winter-killed areas disappointing expectations, while the unscathed fields yield sound and plump grain.

In Michigan, Indiana, Illinois, Missouri, and Kansas, the least injured fields manifestly improved during the last month, and promised better results in thrashing, while the badly winter-killed were worse blighted and more chaffy than was expected. The average was slightly advanced in all these States. The wide range of local condition increases the difficulty in reporting a true average, which may be more closely approximated after thrashing. In some counties the grain is reported better than was anticipated. Some counties in Kansas claim 16 bushels, some 20 per acre, and one reports the best crop ever grown in quality and yield, while others admit damage and disappointment. Spring wheat in the Mississippi river States has had abundant moisture, while there is considerable complaint of drought in the Missouri Valley.

A small increase in the area of corn is reported of about six-tenths of one per cent. The largest proportional extension is in the Northwest. There has been nearly one per cent increase in the South. Condition of corn averages 93.1 per cent. It is lowest in the eastern part of the Ohio Valley, and relatively high in the corn-growing States further west. The Southern States generally report above 90.

There has been a severe decline in the condition of oats, which has fallen from 89.8 to 81.6. It has been heaviest in the cotton States, and is quite severe in the Ohio Valley. In the South where winter oats are grown rust has greatly injured the crop. In the West the aphis has sapped its vitality, and rust has followed; straw is short and the head chaffy.

The condition of rye is 92—nearly the same as at the last report. Barley has advanced from 86.4 to 88.3.

The acreage of potatoes has not appreciably increased. The average condition is 91.7. It is lowest in Missouri, Kansas, Nebraska, and Colorado. The condition of pasture is high, averaging 96. An increase of about three per cent is reported in tobacco. Condition is relatively low, averaging 88.2. It is lowest in the Ohio Valley.

In General.

The "Champion."—The Famous Manufacturing Company, of Chicago, which makes the "Champion" presses, has brought out a belt-power baling press, which is unique, and does its work in the most admirable manner.

A Salary, with expenses paid, will come handy to any one who is now out of employment; especially where no previous experience is required to get the position. If you want a position, see advertisement on second page of cover. "A Chance to Make Money."

The Lightning.—The Kansas City Hay Press Co. makes a strong, simple, and durable hay press, which they call the Lightning press. It is the first of all full-circle, steel presses put on the market. It has been greatly improved, and is now a model press.

The Whitman Ahead.—Just as we go to press with the August issue we learn that a recent decision of the United States Court for the the Northern District of New York fully confirms the validity of the patents under which the Whitman Hay- and Straw-Presses are manufactured by the Whitman Agricultural Co., of St. Louis, and dismissing the adverse claims of other makers.

Ensilage Cutters.—The eminent popularity of the Ross Ensilage and Feed cutters has created such an active demand that a reorganization has taken place. The E. W. Ross Company, of Springfield, Ohio, succeeds the firm of E. W. Ross & Co. The new company has also brought out a new cutter with six knives in place of four, giving greatly increased capacity, together with marked improvements in the feed rollers and carrier. Dealers and farmers will do well to send for the new catalogue.

How to get a Good Microscope.—A really first-class, genuine *3-lens Microscope* such as has been fully described in our July number, page 398, can not fail to be very interesting to every subscriber. Such an instrument furnishes many pleasing and instructive illustrations of objects of natural history and daily life. For practical use it is fully equal to any microscope hitherto offered at $3.00 to $5.00. Manufacturing them by the thousands enables us to furnish them at $1.00 post-paid, or including the AMERICAN AGRICULTURIST for one year, $1.75.

Wood Carpets.—The beauty, durability, and hygienic advantages of wood carpets are beyond question. No one has contributed more largely to bring this into notice than John W. Boughton, 1,207 Chestnut street, Philadelphia. His factory, after having been repeatedly destroyed by fire, is now the largest of the kind in the world. In it are made parquet floors, wood carpet, wainscots, and ceilings in infinite variety of original designs. The new catalogue with colored illustrations is in itself a work of art. The New York branch of the house is Boughton & Terwilliger, 23d street under Fifth Avenue Hotel.

Whitman Hay- and Straw-Presses.—Envy like death, loves a shining mark. The triumphs achieved by the Whitman presses have drawn from jealous rivals various false reports affecting the validity of the Whitman patents. But any possible uneasiness which these reports may have caused is allayed by the pledge given by the Whitman Agricultural Co., as follows: "We will fully protect all our customers against any patent infringement suits, as we have always done. No customer of ours has ever paid one dollar on account of such suits or threats." This is as conclusive as the merits of the machines are indisputable.

Clipped Oats.—One of the greatest improvements in preparing oats for shipment and for feeding is the process of clipping. It is done by running the oats through a machine which cuts off the sharp, tough ends. With the bearded ends of the husk are removed all smut and grit, leaving the kernel clean and bright. The process reduces the bulk about twenty per cent, five measured bushels being reduced to four. A bushel of the clipped oats is equal in intrinsic value to five pecks of unclipped, to say nothing of their freedom from deleterious substances. Samples of each kind, which we have received from Beck & Hexamer, 341 and 343 Front street, Philadelphia, fully illustrate the value of the improvement.

Reliable Farm Machinery.—The attention of our readers is invited to the advertisement in this paper of the old and reliable Empire Agricultural Works, Cobleskill, N. Y., over thirty years under the same management; at which the celebrated Fearless threshing machines, the leading tread-power machines of America and of world-wide reputation, as also other machines are built. These works are also the Eastern headquarters for the famous Smalley ensilage-cutters, which alone is a sufficient guarantee of their excellence, as the aim of the proprietor, Minard Harder, whom we advise persons designing to purchase to consult, is to offer no goods except such as possess "the highest standard of excellence."

Summer Travel.—There are two ways of railroad traveling during the hot and sultry months. One is to start in an old-fashioned day coach, and get through at the other end of the route dusty, dirty, and bedraggled. The other is to enter one of the vestibuled trains of the New York Central & Hudson River railroad, and enjoy all the comforts of a luxurious home while speeding along at a rate which would have seemed incredible a few years ago. The road runs through the heart of the summer region of America, connecting the seaside with Saratoga, Lake George, Niagara Falls, the Thousand Islands, etc. Its time-tables are so arranged that vestibuled trains are run at the hours which best meet the wants and suit the convenience of the public, and with special view to pleasure travel.

Food of Squirrels.—Sadie, Nanuet, N. Y.: It is not every resident of the country who trouble themselves about the food of squirrels, but your question as to "what the squirrels eat when there are no nuts" shows that you have not only eyes to see, but a brain that reflects upon visual impressions. Wild nuts of all kinds were exceedingly scarce last season, and, had not the winter proved very mild, the squirrels must have perished in great numbers. The ground squirrel or chipmunk found it difficult to lay up a store of the soft-shelled nuts upon which he feeds, but seeds of thistles, grasses, and grain in thickly-settled regions helped to fill the larder. Then, the early spring permitted the chipmunk to come out fully one month earlier than usual, and, although he found few nuts of the previous year's crop, he did find an unusual supply of early mushrooms on the old stumps and logs, and we saw them feeding greedily on these, and even carrying them into their holes. The red squirrels also feed on various species of the mushroom, especially those growing from the stems and branches of old dead trees. They feed their young on these as soon as they are large enough to call for more solid food than milk, and they also gather the young catkins, a staminate flower of the oak, and young, immature acorns for the same purpose. The squirrels are often in the same predicament as human beings, and, if they can not get such food as they like best, they must eat whatever they can get to sustain life. A good opera- or field-glass would be of great assistance to you in studying life among the tree-tops, for with its aid you can get very near the birds and squirrels without in the least disturbing them in their labors.

Would Not be Without It.—The AMERICAN AGRICULTURIST is the best practical paper for the farm and stock-raiser published, and I would not be without it for anything. JAMES PERIE, Harney Co., Oregon.

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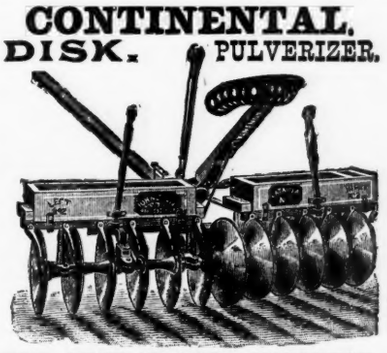

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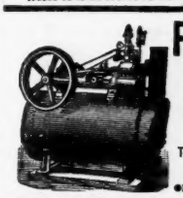

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Nitrate of Soda Manufacture.

The Province of Tarapaca, formerly a part of Peru, but ceded to Chili in 1881 as a war indemnity under certain conditions, and the Province of Antofagasta, acquired by Chili from Bolivia and joining Tarapaca on the south, contain the largest deposits of crude nitrate of soda yet discovered. These tracts of land are perfect deserts, lying within the rainless region extending from the northern part of Peru to the main cordillera of the Andes, a distance of about ninety miles. The point on the slope of the mountain where the deposits of "caliche" or impure nitrate are found is some five hundred or six hundred feet higher than the valley, but the deposit diminishes in quantity and richness as the valley is approached and disappears entirely at the bottom. An examination of the workings of these beds shows, first, that the surface to the depth of eight or ten inches is covered with a layer of fine loose sand; that underneath the sand is found a conglomerate of various substances cemented by sulphate of lime into a hard, compact mass to a depth of six to ten feet, called the "costra," or crust; and that it is invariably just below this crust that the caliche is found. This consists of a variety of colors,—yellowish-white, orange, bluish-gray, etc.,—and is found cemented into a rock-like mass of from four to six feet deep. The caliche is quarried by blasting with a coarse-grained powder, of which as much as one hundred and fifty pounds are sometimes used at a single blast. Neither dynamite nor nitro-glycerine is used, as either would shatter and pulverize the caliche so as to occasion a serious loss. After being brought to the surface the caliche is carefully assorted by experts called "particulars," broken into pieces double the size of an orange and carted by rail to the refinery establishment. These refineries are generally situated on the sea coast where water and fuel can be more conveniently obtained,—the fuel coming from the bituminous coal beds of Southern Chili, and the water being taken from the sea and condensed. This condensation of sea water is necessary because of the scarcity of other water in that section. The impure caliche is first dissolved in the water at a high temperature in long tanks. Then in order to extract the iodine held in solution (of which there are fifty grams in every one hundred and fifty kilograms of impure nitrate), the solution is drawn into a separate tank and charged with sulphate of soda, the resultant chemical change forming the iodide of sodium, precipitating the iodine, which is then refined and sublimated by condensation. The remaining original solution is carried in pipes to enormous shallow pans and the water evaporated by artificial heat, leaving the pure nitrate to become crystallized. The vapor caused by this evaporation is condensed and saved for further use. For the ten years ending December 31, 1888, there were exported from the ports of Taltal, Antofagasta, Iquique, Pisaqua and Topilla (Iquique furnishing two-thirds of the whole) 4,574,440 English tons of nitrate of soda valued at $231,411,182. The export duties for the same, at the rate of one dollar for one hundred kilograms, amounted to $87,470,622. During the same period the exports of iodine amounted to 1,588,074 kilograms, with a total value of $19,333,757, upon which export duties were collected to the amount of $1,172,576. The total export duties on nitrate amounted for 1888 to $17,447,882, while for 1889 it exceeded $19,000,000. Germany and France are the largest importers of Chilian nitrate, in which countries it is largely used in the cultivation of the sugar beet. It is largely consumed also in the manufacture of nitric acid, nitro-glycerine, dynamite, gunpowder, etc.

Flower Notes.

Native Honeysuckle.—W. R. L., Newark, N. J.: The specimen sent is a form of the American Woodbine, *Lonicera grata*, although from so imperfect a specimen it is but rarely possible to identify a plant positively. This beautiful native honeysuckle varies considerably in its wild state, and some of the plants are handsome enough to deserve space in the garden in competition with the best foreign kinds.

Spiræa Gigantea.—Amateur Florist, Harlem, N. Y.: The new herbaceous spiræa which you describe has received the name of *gigantea*, for it is really a giant among all the known herbaceous species, and, in ordinary good soils, it reaches a height of about eight feet, each stem crowned with a large corymb of white, slightly fragrant flowers. It succeeds best in a moist soil and partial shade. It is said to be a robust variety of *S. Kamtchatica* and is a native of Kamtchatca and Behring's Island, consequently hardy anywhere in this country. It comes into bloom in the gardens about New York city during the last week in June and the first of July.

Definition of Species.—"Young Botanist," Philadelphia, Pa., desires to know what constitutes a species. We can not answer this better than by quoting the following from Prof. S. W. Johnson's revised edition of "How Crops Grow:" "Until recently naturalists generally held the view that in 'the beginning' certain kinds of plants and animals were separately created, with the power to reproduce their own kind, but incapable of fertile hybridization, so that only such original kinds could be perpetuated. Such supposed original kinds were called Species. At present, on the contrary, most biologists regard all existing kinds of plants and animals as probably the results of a very slow and gradual development or evolution from one vastly remote ancestor of the simplest type. On this view a Plant Species comprises a number of individuals, among which we are unable to distinguish greater differences than experience shows us we should find among a number of plants raised from the seed of the same parent. On the former view, plants yielding fertile hybrids or crosses must be varieties of the same species. On the latter view different species may hybridize. They are not originally different, and, by evolution or reversion, may pass into each other. On either view, the distinction of plants into species is practically the same, being largely a matter of expert judgment or agreement among authorities, and not capable of exact decision by reference to fixed rules or known natural laws. The characters that are taken to be common to all the individuals of a species are termed *specific characters*. The differences used to divide plants into species are called *specific differences*."

The Use Of

Harsh, drastic purgatives to relieve costiveness is a dangerous practice, and more liable to fasten the disease on the patient than to cure it. What is needed is a medicine that, in effectually opening the bowels, corrects the costive habit and establishes a natural daily action. Such an aperient is found in

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which, while thorough in action, strengthen as well as stimulate the bowels and excretory organs.

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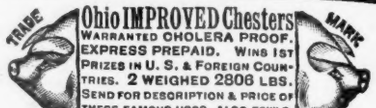
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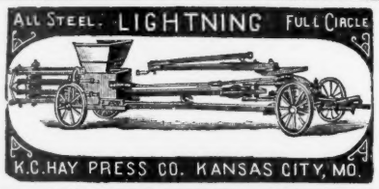

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Answers to Correspondents.

Red Rareripe Peach.—S. T. P., Morrisville, Pa.: The large Red Rareripe peach, once such a popular and excellent variety, was raised by Peter Crary, in 1812, as recorded in our earlier pomological works. Its origin is not given in Downing's "Fruits of America," although it is described. The name *Melocoton*, so often applied to varieties of the peach, is the Spanish for Peach; but it was formerly spelled *Malacatune*, and the yellow freestone Malacatune peach was raised by a Mr. Pallis in his garden in Chatham street, New York, in 1810.

Tomato History.—Market Gardener, Paterson, N. J.: We do not know the exact time that the tomato reached its first stage of a generally popular fruit in New York city, but we think that it was not held in much esteem here a half century ago. William Wilson, in his excellent work on the "Economy of the Kitchen Garden," published in this city in 1828, under the head of "Tomatoes," says: "This is perhaps one of the most forbidding looking plants that has been found capable of producing anything fit for the use of man. Yet its fruit, well ripened and stewed with a liberal proportion of pungent onion, affords a dish which most people can relish a small portion of occasionally." It is quite evident that Mr. Wilson did not suppose that the tomato was edible without cooking, although the people of Spain and Italy had been using it dressed with salt, pepper, and vinegar for more than two hundred years when he wrote his rather sarcastic description of one of our now most popular summer fruits.

Pokeweed.—Housewife, Undercliff, N. J.: The young tender shoots of the common pokeweed (*Phytolacca decandra* (may be used as a substitute for asparagus, or as spring greens in place of spinach. Pokeweed sprouts are an excellent and healthy vegetable, and much used by country people who have learned its good qualities, but they are far too delicate for market purposes; for any vegetable product that will withstand the rough handling and exposure to which it is subjected when sent to our markets must be tough and not easily injured, else the consumer never gets it in prime condition. There are many other kinds of native edible plants besides the pokeweed worthy of careful cultivation and extended use among our people. But it is the old, old story—"the far-fetched and dear bought" are the only things appreciated—and, while our woods and fields are full of excellent and nutritious plants, we are constantly looking far away for something new, regardless of its intrinsic value.

Pickled Hams and Pork.—Piedmont, Fauquier Co., Va.: Custom and an acquired taste have their influence in the preparation and preservation of meats. In the Northern States, pork preserved in brine is the most common process, but in the South dry curing is preferred. Hams are kept in pickle until thoroughly impregnated with it, then taken out and smoked. Each mode has its advantages and perhaps disadvantages, and it may be that the dry salting is best for warm climates, but we think our sugar-cured hams and bacon are as good and wholesome as those found in any country. We think you are in error in regard to the hams of your Southern "razor-backs" being superior to those of our improved breeds of hogs. But if you had said that hogs allowed to run wild in the forests feeding on the nuts such as acorns, beech nuts, and wild roots would make better bacon and hams, with more lean meat, we would have agreed with you, but an improved Berkshire under those conditions will produce better and more tender meat than any "razor-back."

Cabbage Pests.—M. D. T. Ramsy, La Salle Co., Ill.: You may consider yourself quite fortunate in not having discovered no more than four insect enemies of the cabbage in Illinois, and all these of the caterpillar family. We have an insect that causes club-foot, and a fungus that produces similar distortion of the roots and stems. Then there is an aphis which works on the roots, and another attacking the leaves and head. There are also caterpillars of moths belonging to species you have not named. But you appear to be working in the right direction for finding a ready means of destroying all these pests; that is, experimenting with various solutions and powders. Salt brine will destroy some kinds of insects; tobacco-water the aphides; tar-water the common green caterpillar and probably the hairy caterpillar to which you refer; if not, resort to stronger solutions of salt, but avoid all poisonous substances such as Paris green and London purple, as these are dangerous and should never be applied to cabbages.

The Army Worm.—F. H. Perry, Kings Co., N. Y.: The army worm is such a widely distributed insect that total extermination is out of the question, but there are probably better and more efficient means of destroying the worms when they do appear on a farm than plowing furrows or digging trenches about a field in the way you saw a Long Island farmer doing the present season. A better and cheaper mode of destroying them is to dust a strip of grass in front of the advancing army with Paris green, London purple, or slug-shot, as practiced for killing the common potato beetle. One part of carbolic acid to one hundred of water is also said to kill these worms very quickly. But as it is seldom that a farmer has these poisons in stock when the worms appear in his fields, and whatever is to be done to check their advance must be done very promptly else the meadow and grain fields will be laid bare in a few hours, hence the usual mode of plowing a furrow across the field to head them off is adopted. As the furrow is filled with worms another is turned upon them and this continued until the advancing host is greatly diminished in numbers or all are destroyed. These worms usually disappear as suddenly as they appear, and it may be many years before they again invade the same fields.

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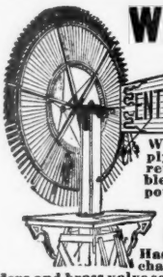

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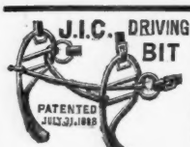

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State, County and Other Fairs in 1890.

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To Our Readers.

If your County or District Fair does not appear in the list below, kindly request the Secretary of the Society to forward to us the name of the place where and the date when it is to be held. We desire a complete list of fairs in the United States and Canada to appear in the September number of the AMERICAN AGRICULTURIST.

STATE AND PROVINCIAL FAIRS.

Am. Institute	New York	Oct. 1-Nov. 29
California	Sacramento	Sept. 8-30
Canada	Toronto	Sept. 8-20
Delaware	Wilmington	Sept. 1-6
Georgia	Macon	Oct. 22-30
Illinois	Am. Fat Stock, Dairy and Poultry Show, Chicago	Nov. 13-22
Illinois	Am. Horse Show Chicago	Nov. 1-8
Illinois	Peoria	Sept. 29-Oct. 3
Indiana	Indianapolis	Sept. 22-27
Iowa	Des Moines	Aug. 29-Sept. 5
Kansas	Topeka	Sept. 15-20
Kentucky	Lexington	Aug. 26-30
Louisiana	Shreveport	Nov. 3-8
Maine	Lewiston	Aug 26-28
Michigan	Lansing	Sept. 9-12
Michigan	Detroit	Aug. 26-Sept. 5
Minnesota	Hamline	Sept. 5-12
Minnesota	Rochester	Sept. 1-5
Minnesota	Minneapolis	Aug. 20-29
Missouri	St. Louis	Oct. 6-11
Montana	Helena	Aug. 23-30
Nebraska	Lincoln	Sept. 5-12
Nevada	Reno	Sept. 22-27
New Brunswick	St. John	Sept. 24-Oct. 4
New Hampshire	Tilton	Sept. 11-13
New Jersey	Trenton	Sept. 29-Oct. 3
New York	Syracuse	Sept. 11-18
New Mexico	Albuquerque	Sept. 15-20
North Carolina	Raleigh	Oct. 14-19
Ohio	Columbus	Sept. 15-19
Ohio (Tri-State)	Toledo	Sept. 8-13
Ontario	London	Sept. 18-27
Rhode Island	Narragansett Park	Sept. 22-26
South Carolina	Darlington	Oct. 30-Nov. 1
South Dakota	Aberdeen	Sept. 15-19
Texas	Dallas	Oct. 18-Nov. 2
Texas	Bexar	Sept. 30-Oct. 11
Washington	Walla Walla	Oct. 6-11
West Virginia	Wheeling	Sept. 8-12
Wisconsin	Milwaukee	Sept. 15-20
Wyoming	Cheyenne	Sept. 15-20

ARKANSAS.

Phillips	Helena	Oct. 21-25
White	Judsonia	Sept. 30-Oct. 2

CALIFORNIA.

Napa	Napa City	Aug. 18-23
Plumas	Quincy	Sept. 22-28
Santa Barbara	Santa Barbara	Sept. 23-26
Santa Clara	San Jose	Aug. 11-16

CALIFORNIA DISTRICT.

Inyo	Independence	Sept. 23-26
San Luis Obispo	San Luis Obispo	Sept. 2-6

COLORADO.

Larimer	Fort Collins	Sept. 23-26

CONNECTICUT.

Fairfield	Huntington	Sept. 24-25
Litchfield	Watertown	Sept. 23-25
Litchfield	New Milford	Sept 9-11
New Haven	Meriden	Sept. 16-19
New Haven	Guilford	Sept. 24
Tolland	Stafford Springs	Oct. 8-9
Tolland	Rockville	Sept. 9-11
Windham	Brooklyn	Sept. 16-18
Windham	Willimantic	Sept. 21-Oct. 2

ILLINOIS.

Boone	Belvidere	Sept. 3-6
Brown	Mt. Sterling	Aug. 25-29
Bureau	Princeton	Sept. 9-12
Carroll	Mt. Carroll	Sept. 8-12
Champaign	Champaign	Aug. 26-29
Coles	Charleston	Sept. 9-13
Du Page	Wheaton	Sept. 9-11
De Witt	Clinton	Aug. 25-29
Edgar	Paris	Sept. 1-5
Effingham	Watson	Sept. 23-26
Fayette	Vandalia	Sept. 30-Oct. 3
Franklin	Benton	Sept. 16-19
Fulton	Avon	Sept. 16-19
Gallatin	Shawneetown	Aug. 26-30
Hamilton	McLeansboro	Sept. 9-12
Henry	Cambridge	Aug. 25-29
Hardin	Elizabethtown	Aug. 13-16
Jasper	Newton	Sept. 16-19
Jo Daviess	Galena	Sept. 30-Oct. 3
Johnson	Vienna	Sept. 16-20
Kankakee	Kankakee	Sept. 9-12
Kendall	Yorkville	Sept. 2-5
Logan	Atlanta	Sept. 2-5
McDonough	Macomb	Aug. 25-29
McHenry	Woodstock	Aug. 26-29
McLean	Bloomington	Sept. 15-19
Mercer	Aledo	Sept. 16-19
Montgomery	Hillsboro	Sept. 9-12
Platt	Monticello	Aug. 18-22
Randolph	Chester	Oct. 14-17
Richland	Olney	Sept. 9-12
Saline	Harrisburg	Sept. 23-26
Union	Jonesboro	Sept. 9-12
Vermillion	Danville	Aug. 19-22
Wabash	Mt. Carmel	Sept. 16-19
Warren	Monmouth	Sept. 9-12
White	Carmi	Sept. 2-6
Whiteside	Morrison	Sept. 2-5
Winnebago	Rockford	Sept. 1-6

INDIANA.

Adams	Decatur	Sept. 2-5
Boone	Lebanon	Aug. 18-22
Clinton	Frankfort	Aug. 25-30
Daviess	Loogootee	Sept. 10-13
Daviess	Washington	Sept. 29-Oct. 4
Dearborn	Lawrenceburg	Aug. 19-23
Decatur	Greensburg	Aug. 26-29
Delaware	Muncie	Aug. 19-22
Elkhart	Goshen	Sept. 25-26
Fulton	Rochester	Sept. 3-6
Fountain	Covington	Sept. 14-19
Gibson	Princeton	Sept. 8-13
Greene	Linton	Sept. 1-6
Hancock	Greenfield	Aug. 19-22
Harrison	Corydon	Aug. 25-31
Henry	New Castle	Aug. 12-16
Huntington	Huntington	Sept. 16-20
Jackson	Brownstown	Sept. 22-26
Jay	Portland	Sept. 30-Oct. 3
Jennings	No. Vernon	Aug. 5-9
Johnson	Franklin	Sept. 16-20
Knox	Vincennes	Sept. 29-Oct. 4
Lake	Crown Point	Sept. 30-Oct. 3
Lawrence	Bedford	Sept. 16-20
Madison	Anderson	Sept. 1-5
Montgomery	Crawfordsville	Sept. 8-12
Newton	Morocco	Sept. 9-12
Noble	Ligonier	Oct. 16-19
Owen	Spencer	Sept. 8-13
Parke	Rockville	Aug. 18-22
Perry	Rome	Sept. 29-Oct. 4
Porter	Valparaiso	Sept. 23-26
Posey	New Harmony	Sept. 15-19
Randolph	Winchester	Sept. 16-19
Ripley	Osgood	Aug. 12-16
Rush	Rushville	Sept. 9-13
Shelby	Shelbyville	Sept. 2-6
Spencer	Rockport	Sept. 22-27
Spencer	Chrisney	Sept. 29-Oct. 4
Steuben	Angola	Sept. 23-26
Sullivan	Sullivan	Sept. 8-13
Tippecanoe	Lafayette	Sept. 1-5
Tipton	Tipton	Aug. 11-15
Vigo	Terre Haute	Aug. 25-29
Wabash	Wabash	Sept. 25-26
Warrick	Boonville	Oct. 6-11

INDIANA DISTRICT.

Blackford	Montpelier	Aug. 12-15
De Kalb	New Castle	Sept. 8-12
Hamilton	Arcadia	Aug. 25-29
Hamilton	Carmel	Aug. 27-29
Hamilton	Sheridan	Sept. 1-5
Henry	Knightstown	Aug. 26-30
Henry	Middletown	Aug. 5-8
Hendricks	No. Salem	Sept. 4-8
Howard	Poplar Grove	Sept. 29-Oct. 3
Huntington	Warren	Sept. 9-13
Jasper	Remington	Aug. 26-29
Kosciusko	Warsaw	Sept. 15-19
Martin	Loogootee	Sept. 10-13
Miami	Macy	Sept. 10-13
Montgomery	New Ross	Aug. 11-15
Noble	Kendallville	Sept. 29-Oct. 3
Parke	Bridgeton	Aug. 11-16
Posey	Mt. Vernon	Sept. 8-12
Pulaski	Francesville	Sept. 23-26
St. Joseph	South Bend	Sept. 15-19
Vermillion	Newport	Sept. 29-Oct. 3
Wabash	N. Manchester	Sept. 30-Oct. 3
Washington	Pekin	Sept. 16-19
Wayne	Dalton	Sept. 9-12

IOWA.

Adams	Corning	Sept. 22-26
Allamakee	Waukon	Sept. 16-19
Appanoose	Moulton	Sept. 17-20
Audubon	Audubon	Sept. 17-20
Benton	Vinton	Sept. 9-12
Boone	Ogden	Sept. 16-19
Buena Vista	Alta	Sept. 10-12
Butler	Allison	Sept. 8-11
Calhoun	Rockwell City	Sept. 24-27
Carroll	Carroll	Sept. 8-11
Cass	Atlantic	Sept. 9-12
Cedar	Mechanicsville	Sept. 9-12
Clarke	Osceola	Aug. 26-29
Clinton	De Witt	Sept. 17-19
Crawford	Denison	Sept. 16-18
Dallas	Adel	Sept. 23-26
Davis	Bloomfield	Aug. 26-29
Decatur	Leon	Aug. 27-29
Des Moines	Burlington	Sept. 8-12
Fayette	West Union	Sept. 2-5
Floyd	Charles City	Sept. 9-12
Grundy	Grundy Center	Sept. 16-18
Hamilton	Webster City	Sept. 16-19
Hancock	Britt	Sept. 10-12
Harrison	Missouri Valley	Sept. 29-Oct. 2
Howard	Cresco	Aug. 26-29
Jackson	Maquoketa	Sept. 9-12
Jasper	Newton	Sept. 16-19
Johnson	Iowa City	Aug. 25-28
Jones	Mechanicsville	Sept. 9-12
Keokuk	Sigourney	Sept. 9-12
Kossuth	Algona	Sept. 24-26
Lee	Donnellson	Sept. 2-5
Linn	Mechanicsville	Sept. 9-12
Louisa	Wapello	Sept. 9-12
Marion	Knoxville	Aug. 19-22
Mitchell	Osage	Sept. 3-5
Monroe	Albia	Sept. 16-19
Muscatine	Muscatine	Sept. 17-19
O'Brien	Sutherland	Sept. 17-19
Osceola	Sibley	Sept. 15
Page	Shenandoah	Sept. 9-12
Poweshiek	Grinnell	Sept. 8-11
Shelby	Harlan	Aug. 26-29
Story	Nevada	Sept. 16-18
Union	Afton	Sept. 17-19
Van Buren	Keosauqua	Sept. 10-12
Wapello	Ottumwa	Aug. 18-22
Warren	Indianola	Sept. 16-19
Washington	Washington	Sept. 23-26
Wayne	Corydon	Sept. 15-19
Webster	Fort Dodge	Sept. 30-Oct. 3
Winneshiek	Decorah	Sept. 9-12
Wright	Clarion	Sept. 16-18

IOWA DISTRICT.

Clayton	Strawberry Point	Sept. 16-19
Dallas	Perry	Sept. 24-27
Fayette	Brush Creek	Sept. 9-12
Harrison	Dunlap	Sept. 23-25
Henry	Winfield	Sept. 2-5
Jones	Anamosa	Aug. 26-29
Keokuk	Richland	Sept. 16-19
Lee	Keokuk	Aug. 12-15
Mahaska	New Sharon	Sept. 16-19
Muscatine	W. Liberty	Sept. 9-12
O'Brien	Sheldon	Sept. 3-5
Sac	Odebolt	Sept. 10-12
Scott	Davenport	Sept. 22-26
Scott	Mt. Joy	Sept. 9-12
Tama	Traer	Aug. 26-28
Taylor	Lenox	Oct. 1-4
Van Buren	Milton	Sept. 9-12
Wapello	Agency City	Sept. 29-Oct. 2
Wayne	Lineville	Sept. 30-Oct. 3

KANSAS.

Atchison	Atchison	Sept. 8-13
Bourbon	Fort Scott	Sept. 23-26
Brown	Hiawatha	Sept. 9-12
Chase	Cottonwood Falls	Sept. 23-25
Coffey	Burlington	Sept. 8-12
Cowley	Winfield	Sept. 2-4
Crawford	Girard	Sept. 23-26
Jefferson	Oskaloosa	Sept. 9-12
Lincoln	Lincoln	Sept. 18-20
Linn	Mound City	Sept. 16-19
Montgomery	Independence	Sept. 2-5
Nemaha	Seneca	Sept. 16-19
Osage	Burlingame	Sept. 9-12
Rush	La Crosse	Sept. 24-26
Sumner	Wellington	Aug. 26-29
Shawnee	Topeka	Sept. 12-20

KENTUCKY.

Adair	Columbia	Aug. 19-22
Anderson	Lawrenceburg	Aug. 19-22
Bourbon	Paris	Sept. 2-6
Boyle	Danville	Aug. 5-8
Caldwell	Princeton	Oct. 8-11
Daviess	Owensboro	Oct. 7-11
Fayette	Lexington	Aug. 26-29
Hardin	Elizabethtown	Sept. 9-12
Hart	Horse Cave	Sept. 16-19
Henderson	Henderson	Sept. 30-Oct. 4
Henry	Eminence	July 23-27
Nelson	Bardstown	Sept. 2-7
Pulaski	Somerset	Sept. 9-12
Shelby	Shelbyville	Aug. 26-29
Warren	Bowling Green	Sept. 2-6

KENTUCKY DISTRICT.

Jefferson	Fern Creek	Aug. 19-21

MAINE.

Aroostook	Houlton	Sept. 24-25
Cumberland	Gray	Aug. 26-28
Franklin	Farmington	Sept. 30-Oct. 2
Oxford	Canton	Sept. 23-25
Penobscot	Exeter	Sept. 23-25
Sagadahoc	Topsham	Oct. 14-16
Somerset	Skowhegan	Sept. 16-18
York	Springdale	Sept. 30-Oct. 2

MARYLAND.

Cecil	Elkton	Oct. 7-10
Frederick	Frederick City	Oct. 14-17
Washington	Hagerstown	Oct. 14-17

MASSACHUSETTS.

Barnstable	Barnstable	Sept. 9-10
Berkshire	No. Adams	Sept. 16-18
Berkshire	Pittsfield	Sept. 9-12
Berkshire	Gt. Barrington	Sept. 24-26
Franklin	Charlemont	Sept. 11-12
Franklin	Greenfield	Sept. 25-26
Hampden	Blandford	Sept. 10-12
Hampden	Palmer	Sept. 16-17
Hampshire	Northampton	Oct. 1-3
Middlesex	Framingham	Sept. 9-10
Middlesex	Lowell	Sept. 23-25
Nantucket	Nantucket	Sept. 3-4
Plymouth	Brockton	Oct. 1-4
Plymouth	Hingham	Sept. 23-24
Plymouth	Bridgewater	Sept. 17-20
Worcester	Oxford	Sept. 16-17
Worcester	Fitchburg	Sept. 23-24
Worcester	Athol	Sept. 30-Oct. 1
Worcester	Sturbridge	Sept. 11-12
Worcester	Barre	Sept. 25-26
Worcester	Uxbridge	Sept. 23-24
Worcester	Worcester	Sept. 2-5

MICHIGAN.

Antrim	Bellaire	Sept. 30-Oct. 2
Bay	Bay City	Sept. 30-Oct. 3
Barry	Hastings	Sept. 23-26
Calhoun	Marshall	Sept. 30-Oct. 3
Eaton	Charlotte	Sept. 30-Oct. 3
Genesee	Flint	Sept. 30-Oct. 3
Hillsdale	Hillsdale	Sept. 29-Oct. 3
Kalamazoo	Kalamazoo	Sept. 30-Oct. 3
Lapeer	Lapeer	Sept. 22-24
Lenawee	Adrian	Sept. 22-26
Macomb	Armada	Oct. 1-3
Macosta	Big Rapids	Sept. 30-Oct. 2
Midland	Midland	Oct. 9-12
Oakland	Pontiac	Sept. 30-Oct. 3
Oceana	Hart	Sept. 23-26
Washtenaw	Ann Arbor	Sept. 30-Oct. 3
Wayne	Grosse Point	Sept. 15-19

MICHIGAN DISTRICT.

Tuscola	Caro	Sept. 30-Oct. 3

MINNESOTA.

Fillmore	Preston	Sept. 16-19
Lac-Qui-Parle	Madison	Sept. 18-20
Mower	Austin	Sept. 16-18
Nicollet	St. Peter	Sept. 18-20
Ramsey	Hamline	Sept. 8-13
Stearns	St. Cloud	Sept. 16-19
Todd	Long Prairie	Sept. 23-25

MISSOURI.

Barton	Lamar	Sept. 29-Oct. 3
Boone	Columbia	Aug. 12-16
Callaway	Fulton	Aug. 12-17
Carroll	Carrollton	Sept. 9-13
Cass	Belton	Aug. 19-23
Charlton	Keytesville	Oct. 7-12
Dade	Lockwood	Oct. 7-10
Daviess	Jamesport	Sept. 2-5
Franklin	Washington	Sept. 4-6
Gasconade	Hermann	Aug. 29-30
Gentry	Albany	Aug. 26-29
Greene	Springfield	Sept. 9-13
Harrison	Ridgeway	Sept. 9-12
Jasper	Carthage	Sept. 16-19
Johnson	Holden	Aug. 26-29
Knox	Newark	Sept. 9-13
Lincoln	Troy	Sept. 2-5
Livingston	Avalon	Sept. 2-5
Macon	La Plata	Sept. 9-12
Marion	Palmyra	Sept. 30-Oct. 4
Moniteau	California	Sept. 16-19
Pettis	Sedalia	Aug. 19-23
Putnam	Unionville	Aug. 27-30
Schuyler	Lancaster	Sept. 10-13
St. Charles	St. Charles	Sept. 10-12

MISSOURI DISTRICT.

Caldwell	Hamilton	Aug. 26-30
Cape Girardeau	Cape Girardeau	Oct. 14-18
Ray	Lawson	Aug. 19-22

NEBRASKA.

Adams	Hastings	Sept. 2-4
Antelope	Neligh	Sept. 24-26
Brown	Long Pine	Sept. 17-20
Buffalo	Kearney	Sept. 16-19
Burt	Tekamah	Sept. 30-Oct. 3
Butler	David City	Sept. 23-26
Cheyenne	Sidney	Sept. 17-19
Clay	Clay Center	Sept. 16-19
Colfax	Schuyler	Sept. 17-19
Dawson	Lexington	Sept. 23-26
Dodge	Fremont	Sept. 30-Oct. 3
Douglas	Omaha	Sept. 1-5
Frontier	Stockville	Sept. 17-19
Fillmore	Geneva	Sept. 16-19
Franklin	Bloomington	Sept. 24-26
Furnas	Beaver City	Sept. 16-18
Hall	Grand Island	Sept. 16-19
Harlan	Orleans	Sept. 3-5
Hayes	Hayes Center	Oct. 1-4
Hitchcock	Culbertson	Sept. 16-19
Jefferson	Fairbury	Sept. 23-26
Johnson	Tecumseh	Oct. 7-10
Kearney	Minden	Sept. 23-26
Lancaster	Lincoln	Sept. 5-12
Madison	Madison	Sept. 17-19
Merrick	Central City	Sept. 17-20
Nemaha	Auburn	Sept. 30-Oct. 3
Perkins	Madrid	Sept. 23-26
Polk	Osceola	Sept. 2-5
Richardson	Falls City	Sept. 1-5
Sarpy	Papillion	Sept. 3-5
Saunders	Wahoo	Sept. 2-4
Seward	Seward	Sept. 24-27
Stanton	Stanton	Sept. 30-Oct. 3
Thayer	Hebron	Sept. 17-20
Valley	Ord	Sept. 23-26
York	York	Sept. 23-25

NEW HAMPSHIRE.

Merrimack	Tilton	Sept. 10-12

NEW JERSEY.

Atlantic	Egg Harbor City	Sept. 20-22
Burlington	Mt. Holly	Sept. 8-12
Cumberland	Bridgeton	Aug. 20-21
Cumberland	Vineland	Sept. 2-4
Salem	Woodstown	Aug. 26-28

NEVADA.

Washoe	Reno	Sept. 22-27

NORTH CAROLINA.

Gaston	Mount Holly	July 28-Aug. 2

NEW YORK.

Allegany	Angelica	Sept. 9-12
Allegany	Cuba	Sept. 23-26
Broome	Whitney's Point	Sept. 1-4
Chenango	Sherburne	Sept. 15-18
Clinton	Plattsburgh	Sept. 9-12
Columbia	Chatham	Sept. 2-5
Columbia	Hudson	Aug. 26-29
Delaware	Delhi	Sept. 4-6
Dutchess	Poughkeepsie	Sept. 9-12
Essex	Westport	Sept. 2-4
Fulton	Johnstown	Sept. 8-11
Lewis	Lowville	Sept. 16-19
Livingston	Geneseo	Sept. 30-Oct. 2
Monroe	Rochester	Sept. 22-26
Montgomery	Fonda	Sept. 1-4
Niagara	Lockport	Sept. 25-27
Ontario	Canandaigua	Sept. 24-26
Orleans	Albion	Sept. 25-27
Oswego	Oswego	Sept. 2-5
Otsego	Cooperstown	Sept. 22-24
Putnam	Carmel	Aug. 19-22
Rockland	Spring Valley	Sept. 23-26
Schoharie	Cobleskill	Sept. 29-Oct. 2
Schoharie	Schoharie	Sept. 22-25
Seneca	Waterloo	Sept. 24-26
Steuben	Bath	Sept. 30-Oct. 3
St. Lawrence	Canton	Sept. 16-19
Suffolk	Riverhead	Sept. 30-Oct. 3
Sullivan	Monticello	Sept. 2-4
Tioga	Owego	Sept. 9-11
Tompkins	Ithaca	Sept. 9-12
Washington	Fort Edward	Sept. 8-12
Wayne	Lyons	Sept. 22-25
Westchester	White Plains	Sept. 29-Oct. 4
Yates	Penn Yan	Sept. 23-25

OHIO.

Adams	West Union	Sept. 23-26

Anglaize	Wapakoneta	Sept. 30-Oct. 4
Ashtabula	Jefferson	Sept. 23-26
Brown	Georgetown	Oct. 7-10
Champaign	Urbana	Aug. 26-29
Clark	Springfield	Sept. 8-12
Clermont	Owensville	Sept. 1-6
Clinton	Sabina	Aug. 19-22
Clinton	Wilmington	Sept. 9-12
Cuyahoga	Chagrin Falls	Sept. 9-12
Drake	Greenville	Sept. 8-12
Defiance	Defiance	Sept. 2-5
Erie	Sandusky	Sept. 16-19
Fayette	Washington C. H.	Aug. 26-29
Fulton	Ottokee	Sept. 23-26
Gallia	Gallipolis	Aug. 12-15
Greene	Xenia	Sept. 2-5
Guernsey	Washington	Sept. 30-Oct. 3
Hardin	Kenton	Sept. 2-5
Hardin ("Tri-County")	Ada	Aug. 26-29
Harrison	Cadiz	Sept. 16-19
Highland	Hillsboro	Aug. 5-8
Hocking	Logan	Oct. 1-4
Holmes	Millersburg	Sept. 30-Oct. 3
Huron	Norwalk	Sept. 9-12
Jefferson	Smithfield	Sept. 24-26
Knox	Mt. Vernon	Sept. 23-26
Lake	Painesville	Aug. 26-29
Licking	Newark	Sept. 30-Oct. 3
Licking	Pataskala	Sept. 9-12
Licking	Hartford	Sept. 23-26
Lorain	Elyria	Sept. 23-26
Marion	Marion	Sept. 30-Oct. 3
Medina	Medina Village	Sept. 2-4
Morgan	McConnellsville	Sept. 8-11
Morrow	Mt. Gilead	Oct. 7-10
Noble	Sarahsville	Sept. 9-12
Noble	Ligonier	Sept. 16-19
Ottawa	Port Clinton	Sept. 24-26
Perry	New Lexington	Aug. 27-29
Perry	Somerset	Oct. 20-23
Portage	Ravenna	Sept. 16-19
Putnam	Ottawa	Sept. 30-Oct. 4
Richland	Mansfield	Sept. 30-Oct. 3
Ross	Chillicothe	Aug. 12-15
Sandusky	Fremont	Sept. 30-Oct. 3
Sandusky	Clyde	Sept. 23-26
Shelby	Sidney	Sept. 23-26
Starke	Canton	Sept. 22-26
Starke	Marlboro	Oct. 2-4
Trumbull	Warren	Sept. 9-12
Tuscarawas	Canal Dover	Sept. 30-Oct. 3
Union	Marysville	Sept. 23-26
Van Wert	Van Wert	Sept 2-5
Warren	Lebanon	Aug. 26-29
Washington	Marietta	Sept. 16-18
Wayne	Wooster	Sept. 23-26
Wood	Bowling Green	Sept. 30-Oct. 4

OHIO DISTRICT.

Scioto	Portsmouth	Aug. 5-8

PENNSYLVANIA.

Armstrong	Parker's Landing	Sept. 15-18
Beaver	Beaver	Sept. 23-26
Beaver	Hookstown	Aug. 19-22
Bradford	East Towanda	Sept. 23-26
Bradford	Troy	Aug. 26-28
Bucks	Doylestown	Sept. 23-26
Butler	Butler	Sept. 9-12
Cambria	Carrolltown	Sept. 9-12
Carbon	Lehighton	Oct. 7-10
Chester	West Chester	Sept. 18-20
Chester	Oxford	Sept. 24-26
Chester	Phoenixville	Oct. 1-3
Clarion	Clarion	Sept. 23-26
Columbia	Bloomsburg	Oct. 15-18
Columbia	Berwick	Sept. 3-6
Columbia	Benton	Oct. 1-4
Crawford	Cambridgeboro	Sept. 16-19
Dauphin	Gratz	Sept. 23-26
Erie	Corry	Sept. 16-19
Fayette	Uniontown	Oct. 9-12
Jefferson	Punxsutawney	Sept. 16-19
Jefferson	Brookville	Sept. 9-12
Juniata	Port Royal	Sept. 30-Oct. 3
Lackawanna	Scranton	Sept. 22-25
Lawrence	New Castle	Aug. 26-29
Lebanon	Lebanon	Sept. 2-6
Lehigh	Allentown	Sept. 30-Oct. 3
Luzerne	Dallas	Sept. 2-5
Lycoming	Hughesville	Oct. 8-11
Mercer	Mercer	Sept. 8-10
Mercer	Stonesboro	Sept. 24-26
Monroe	Stroudsburg	Sept. 3-5
Montgomery	Pottstown	Sept. 23-26
Montour	Washingtonville	Oct. 7-10
Northampton	Nazareth	Oct. 7-10
Northumberland	Milton	Oct. 1-4
Perry	Newport	Sept. 16-19
Schuylkill	Orwigsburg	Sept. 30-Oct. 3
Susquehanna	Harford	Sept. 24-25
Susquehanna	Montrose	Oct. 1-2
Tioga	Wellsboro	Sept. 2-5
Warren	Warren	Sept. 9-12
Washington	Washington	Sept. 1-5
Washington	Burgettstown	Sept. 30-Oct. 2
Wayne	Honesdale	Sept. 23-25
Westmoreland	Greensburgh	Oct. 7-10
Wyoming	Tunkhannock	Sept. 17-19
York	Hanover	Sept. 9-12
York	York	Oct. 6-11

RHODE ISLAND.

Washington	Kingston	Sept. 16-18

SOUTH CAROLINA.

Charleston	Charleston	Jan. 13-17
Richland	Columbia	Nov. 11-14

SOUTH DAKOTA.

Clay	Vermillion	Sept. 9-12
Turner	Parker	Sept. 24-26

VERMONT.

Rutland	Fair Haven	Sept. 23-26
Rutland	Rutland	Sept. 9-11
Washington	Waitsfield	Sept. 3-4
Windham	Brattleboro	Oct. 1-2
Windsor	Woodstock	Sept. 23-25

VIRGINIA.

Augusta	Staunton	Sept. 30-Oct. 3
Botetourt	Fincastle	Sept. 25-27
Fairfax	Grange Camp	Aug. 4
Lancaster	Kilmarnock	Nov. 6-8
Loudoun	Leesburg	Aug. 26-28
Northampton	Cape Charles City	Aug. 18-23
Prince George	Prince George	Oct. 15-17
Shenandoah	Woodstock	Oct. 7-10

WEST VIRGINIA.

Harrison	Clarksburg	Sept. 2-4
Mason	Mount Pleasant	Aug. 26-29
Ohio	Wheeling	Sept. 8-12
Ritchie	Pennsboro	Aug. 26-28
Tyler	Middlebourne	Sept. 3-5
Wetzel	New Martinsville	Aug. 26-28

WISCONSIN.

Barron	Shetek	Sept. 10-12
Brown	Green Bay	Sept. 9-12
Dane	Madison	Sept. 23-26
Fond du Lac	Fond du Lac	Sept. 10-12
Grant	Bloomington	Sept. 10-12
Grant	Lancaster	Sept. 17-19
Green	Monroe	Sept. 10-13
Iowa	Dodgeville	Aug. 27-29
Jefferson	Jefferson	Sept. 2-5
Juneau	Mauston	Sept. 23-25
La Crosse	West Salem	Sept. 30-Oct. 2
La Fayette	Darlington	Sept. 9-12
Manitowoc	Manitowoc	Sept. 8-11
Marathon	Wausau	Aug. 26-29
Pepin	Durand	Sept. 10-12
Racine	Racine	Sept. 2-5
Rock	Janesville	Sept. 9-12
Vernon	Viroqua	Sept. 24-26
Walworth	Elkhorn	Sept. 23-26
Waukesha	Waukesha	Aug. 26-29
Brown	De Pere	Sept. 3-5
Burnett	Grantsburg	Sept. 20
Clark	Neillsville	Sept. 11-13
Columbia	Portage	Sept. 9-12
Jackson	Black River Falls	Sept. 8-10
Outagamie	Seymour	Sept. 15-17
Ozaukee	Cedarburg	Sept. 23-25
Pierce	Ellsworth	Sept. 24-26
Portage	Amherst	Sept. 16-18
Trempealeau	Arcadia	Sept. 17-19

CANADA.

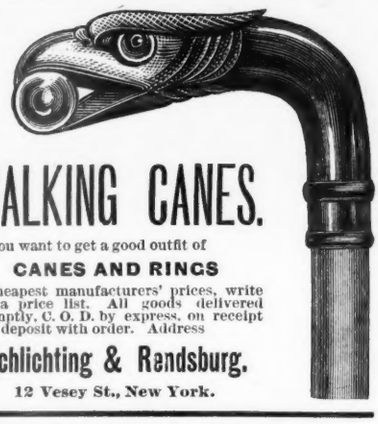
Blandford	Woodstock	Sept. 30-Oct. 1
Brant	Brantford	Sept. 9-11
Brant	Paris	Oct. 7-8
Bruce	Paisley	Sept. 24-26
Bruce	Walkerton	Sept. 30-Oct. 4
Carleton	Ottawa	Sept. 22-27
Elgin	Belmont	Oct. 2
Elgin	St. Thomas	Sept. 16-18
Grey	Durham	Sept. 23-24
Grimsby	Smithville	Oct. 6-7
Haldimand	Cayuga	Sept. 30-Oct. 1
Hamilton	Hamilton	Sept. 22-26
Hastings	Belleville	Sept. 23-26
Huron	Goderich	Sept. 15-17
Kent	Chatham	Oct. 1-3
Lanark	Almonte	Sept. 30-Oct. 3
Lincoln	St. Catharine's	Sept. 29-Oct. 1
London	London	Sept. 18-27
Moulton	Dunnville	Oct. 2
Norfolk	Simcoe	Oct. 14-15
Norwich	Norwich	Oct. 1-2
Ontario	Whitney	Sept. 23-26
Ontario	Cannington	Sept. 26-27
Perth	Stratford	Oct. 2-3
Peterboro	Peterboro	Sept. 24-26
Prince Edward	Picton	Sept. 9-10
Renfrew	Renfrew	Sept. 25-26
Renfrew	Beachburg	Oct. 2-3
Sherbrooke	Sherbrooke	Sept. 3-5
Victoria	Lindsay	Sept. 30-Oct. 1
Wellington	Guelph	Sept. 25-27
York	Woodbridge	Oct. 21-22

NOVA SCOTIA.

Yarmouth	Yarmouth	Oct. 9-10

PRINCE EDWARD ISLAND.

Queens	Charlottetown	Oct. 1-3



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If you want to get a good outfit of

CANES AND RINGS

at cheapest manufacturers' prices, write for a price list. All goods delivered promptly, C. O. D. by express, on receipt of a deposit with order. Address

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MADE WITH BOILING WATER.

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GRATEFUL—COMFORTING.

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MADE WITH BOILING MILK.

Profitable Investment.

For sale at ($10.00) ten dollars per share, any part of 12,500 shares of the capital stock of the Baja Gold Mining & Milling Co., (Stock fully paid and non-assessable, par value $100.00) to erect mills and plant on very extensive gold mining property in Lower California. Six mines opened and extensively developed. Thousands of tons of free milling gold ore. Address for subscription and particulars, DANIEL H. BACON, Treas., Treasurers Office, 917 Royal Insurance Building, Chicago, Ill.

PENSIONS. DO YOU WANT A PENSION?

Invalid, Widow's or Minor's, or are you drawing *less* than $12.00 per month.

Have you a claim pending but want relief—*now?* Write us and receive by return mail appropriate blank and full instructions for *your* case, with a copy of the new and liberal law. **LONGSHAW & BALLARD.**

References given. Box 46, Washington, D. C.

FREE FOR 20 DAYS

from date of this paper. Wishing to introduce our **CRAYON PORTRAITS** and at the same time extend our business and make new customers, we have decided to make this special offer. Send us a picture of yourself or any member of your family, living or dead, and we will make you a **LIFE SIZE CRAYON PORTRAIT FREE OF CHARGE,** provided you exhibit it to your friends as a sample of our work, and use your influence in securing us future orders. Place name and address on back of picture and it will be returned in perfect order. We make any change in picture you wish, not interfering with the likeness. Refer to any Bank in New York. Address all mail to **PACIFIC PORTRAIT HOUSE,** Broadway Theatre Bldg, New York.

SNUGGS—Gee whiz! What in the thunder is these here things comin' to? If there ain't the man in the moon comin' down. Say, here, Moon y old boy what do yer want? MAN IN THE MOON—O, nothin' in particular, only im makin' a trip to the earth, to lay in a supply of them world-renowned Murray Buggies and Harness for our people up in the moon, for they're the only Buggies and Harness that will stand our rough roads and bad climate. You bet we know good buggies and harness when we see 'em, and we wont use nothin' but the "Murray" Brand. I'd advise you, Snuggs, to go and do likewise. You'd better send right away for one of their catalogues. Address, Wilber H. Murray, M'f'g Co. Murray Building, Cincinnati, O, and they will send you a catalogue of their fine work.

HYNDMAN'S STEEL ROOFING

which has become so popular, is cheaper and more durable than TIN or SHINGLES. It is just what every farmer wants.

It is proof against Rain, Winds, Lightning, Snow and Fire.

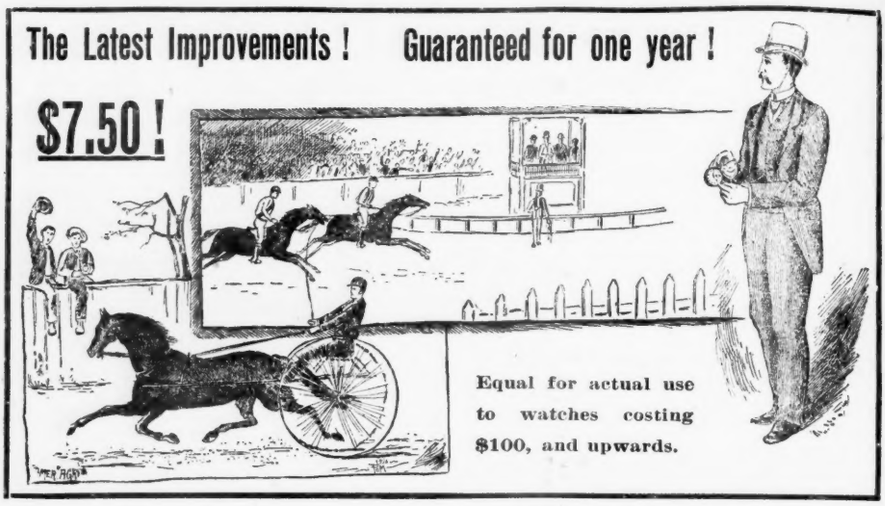
You can put it on Yourself. $3.60 will buy 100 sq. ft.

The best in the world. For the latest information in regard to reliable and durable Roofing address W. G. HYNDMAN & CO., Cincinnati, Ohio. Mention name of paper when you write.

WHEN YOU ATTEND THE FAIRS THIS FALL YOU OUGHT TO HAVE ONE OF OUR

SPLIT SECOND HORSE TIMERS

IN OXIDIZED SILVER CASE.



The country is flooded with cheap, trashy watches, and the day for them has passed. What our subscribers want is one of the best kind made, one that he will be proud to wear and have pleasure in using. This is just what we offer.

OUR STOP-WATCHES.

Time was when the stop-watch, with the split second-hand, used for timing horses on race tracks, cost many hundred dollars, and could be afforded by only a few. The decrease in the cost of manufacture of movements now brings both within the means of all.

The five advantages that these watches possess are:

1. A stop-watch, sweep-second, each second split into fifths, for timing horses, races, &c.

2. Oxidized silver case.

3. The latest improvements of every kind in winding, setting, opening, &c.

4. A guarantee of one year from the maker of the movements.

5. As beautiful a design as can be made.

These five advantages are guaranteed by the Manhattan Watch Company of New York, one of the largest and oldest as well as best known of the makers of fine-grade watches.

No engraving can give any adequate idea of the beauty of the face of this watch, of finest porcelain, or the slender, thread-like second hand, extending to the fifths of a second.

The movement is the quick train, with straight line lever escapement, with a direct acting hand-set that permits accurate setting, and will not allow the hands to move out of position while setting. In the sweep-second movement the second-hand is run direct from the movement train, insuring perfect motion, while the dial train and hands are run by a friction pinion from a side center. This gives all the advantages in time-keeping qualities of the most delicately-adjusted and expensive movement.

It has a direct stem-wind, and snap back.

For $7.50 we will send one of these watches by registered mail, to any post-office in the United States.

For $8.50 we will include the AMERICAN AGRICULTURIST for one year. **For $9.50** we send the watch and the AMERICAN AGRICULTURIST two years.

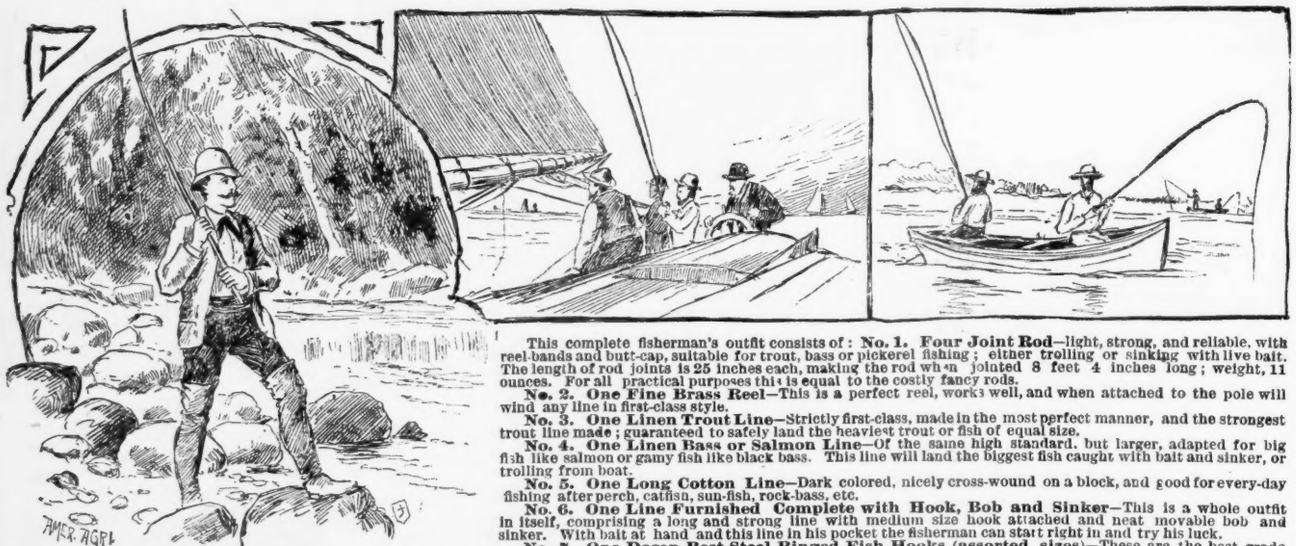
For a club of 14 subscribers, or for 7 subscribers and $4 extra, we will send the watch free to the sender.

Address all orders to

AMERICAN AGRICULTURIST, 52 and 54 Lafayette Place, New York.

FOUR JOINT FISHING ROD AND OUTFIT!

WITH THE AMERICAN AGRICULTURIST ONE YEAR $2.00 POST-PAID. ROD AND OUTFIT ALONE, $1.25 POST-PAID.



This complete fisherman's outfit consists of: **No. 1. Four Joint Rod**—light, strong, and reliable, with reel-bands and butt-cap, suitable for trout, bass or pickerel fishing; either trolling or sinking with live bait. The length of rod joints is 25 inches each, making the rod when jointed 8 feet 4 inches long; weight, 11 ounces. For all practical purposes this is equal to the costly fancy rods.

No. 2. One Fine Brass Reel—This is a perfect reel, works well, and when attached to the pole will wind any line in first-class style.

No. 3. One Linen Trout Line—Strictly first-class, made in the most perfect manner, and the strongest trout line made; guaranteed to safely land the heaviest trout or fish of equal size.

No. 4. One Linen Bass or Salmon Line—Of the same high standard, but larger, adapted for big fish like salmon or gamy fish like black bass. This line will land the biggest fish caught with bait and sinker, or trolling from boat.

No. 5. One Long Cotton Line—Dark colored, nicely cross-wound on a block, and good for every-day fishing after perch, catfish, sun-fish, rock-bass, etc.

No. 6. One Line Furnished Complete with Hook, Bob and Sinker—This is a whole outfit in itself, comprising a long and strong line with medium size hook attached and neat movable bob and sinker. With bait at hand and this line in his pocket the fisherman can start right in and try his luck.

No. 7. One Dozen Best Steel Ringed Fish Hooks (assorted sizes)—These are the best grade of hooks, warranted strong, sharp in points and barbs, and handy to use, anybody being able to tie their line into the ring of the hook. With this set of hooks the fishrman can try his luck for any size, from minnows to weakfish.

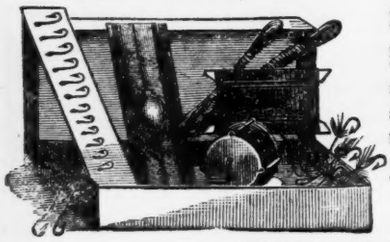
No 8. Two Imported Trout Flies—These are the new improved style of fly. They will draw trout from deep pools when the other flies fail. They are natural, brilliant in colors, strongly fastened around the hooks, and will give excellent satisfaction.

No. 9. One Improved Bass Fly—This is the best approved fly for black-bass fishing, and is the equal of the trout flies in excellence of material and artistic position.

No. 10. One Improved Salmon Fly—Also accompanies the outfit, and is of the best pattern and perfect in shape and color; sure to raise and catch the fish.

No. 11. Two Snell Hooks and Gut—These hooks are set on long guts, and where fish cut the lines, one of these snell hooks can be safely used; the gut can not be severed and lands the fish every time.

Here then is a complete fisherman's outfit at the nominal price of $1.25. No excuse now; the poorest boy or man can afford this complete assortment, and ought to keep his family in fish the year round, or catch enough to sell. As much sport can be had with this outfit as with a ten-dollar one, and the quality of everything is as represented.



Price of the complete outfit, $1.25. Sent by mail post-paid.

For $2 we will send this outfit, post-paid, together with a year's subscription to the AMERICAN AGRICULTURIST.

The outfit and subscription sent to separate addresses if desired.

We will send the outfit without rod for 50 cents, or with the AMERICAN AGRICULTURIST one year, for $1.60.

AMERICAN AGRICULTURIST, 52 and 54 Lafayette Place, New York.

American Agriculturist French Achromatic Telescope.

FULL SIZE WHEN CLOSED.

FOR ONLY $3.00 we will send one of these telescopes post-paid to any post-office in the United States, and in addition will include with each instrument

A YEAR'S SUBSCRIPTION FREE TO THE AMERICAN AGRICULTURIST.

FOR $4 we will send the Telescope post-paid and the American Agriculturist for TWO YEARS.

The telescope and subscription sent to separate addresses if desired.

This telescope is first-class in every respect and our subscribers testify that it is equal to other instruments that cost from $5.00 to $15.00 each

High power achromatic telescopes have heretofore sold at prices placing them almost beyond the reach of persons of moderate means. The telescope we now offer is just what the people want, **a real philosophical instrument, at a low price.**

FARMERS, HERDSMEN, HUNTERS, PROSPECTORS, SAILORS, TRAVELERS, TOURISTS, AND, IN FACT, EVERYBODY, WILL FIND THIS INSTRUMENT INVALUABLE.

Farmers and herdsmen can see their cattle or sheep miles away. **Hunters** can distinguish game at great distances, and by this means not give warning of their approach. **The Tourist** can bring distant mountains, valleys and cities almost to his feet, while any one with this telescope will soon become familiar with different objects that before (from their great distance) he knew nothing of. **Friends and acquaintances** can be recognized at great distances and the instrument will prove both instructive and amusing to every one.

DESCRIPTION OF THE TELESCOPE.

DIMENSIONS:—The length of the telescope, when extended, is 16 1-2 inches; when closed, 6 inches; diameter, 1 1-4 inches.

FIVE LENSES. This useful and beautiful instrument has five lenses, of the best French manufacture. The object lenses are achromatic, that is, convex and concave, having different refractive and dispersive powers, with the curvatures so adjusted that the chromatic aberration produced by the one is corrected by the other, and light emerges from the compound lens undecomposed, or free from color, objects at a long distance appearing clear and natural.

BRASS SLIDES. The slides and mountings are made of brass highly polished, the telescoping tubes fitting closely into each other.

BRASS SAFETY CAPS. Safety caps of polished brass cover the exposed ends of the instrument, keeping out dampness and dust when not in use.

MOROCCO COVERED TUBES. The main tube or body of the telescope is covered with handsome French morocco, making it altogether a most excellent instrument.

Each Telescope is furnished in a strong cloth-covered case. It is strongly made and can not get out of order, but will last for a lifetime.

HOW FAR YOU CAN SEE WITH IT.

If the atmosphere is clear you can see the time on a tower clock at a distance of five miles. A man who is one mile away will appear to be fifteen rods from you, and persons with whom you are familiar can be recognized at a distance of three or four miles. The moons of Jupiter can be seen with it. What are supposed to be mountains or extinct craters on the surface of the moon can be seen plainly with the glass.

There is not a man, woman or child that can not find uses for such a glass almost every day of their life. Many of our customers write us that they never had so much pleasure and enjoyment from a small investment as this telescope afforded them.

WHAT OUR SUBSCRIBERS SAY OF IT. A FEW OF MANY TESTIMONIALS RECEIVED.

ALL WE CLAIMED FOR IT.

I received the Telescope by mail in good order. **Am more than pleased** with it and have **enjoyed myself** in using it while traveling through the country **more than double its cost.** I find it **better than I expected** and **all you claim for it.** I have let others try it and they **all pronounce it** a very **clear distinct glass, as good** as they **ever saw** for its size.—[Geo. B. Harris, Centreville, R. I.

EXPECTATIONS FULLY REALIZED.

It is **with pleasure** that I embrace this opportunity of testifying to **the merits** of the **French Achromatic Telescope** sent me by the "AMERICAN AGRICULTURIST." **I am much pleased with it** and I have **realized fully** the **expectations** which I derived from reading your advertisement respecting it.—[Geo. F. Beale, Cola, Pa.

JUST AS REPRESENTED.

The French Achromatic Telescope ordered, you sent me very promptly. **I find it** to be **as you represented in every detail.** It gives me much pleasure in looking off at long distance. **Objects one mile away** look to be almost **within reach. I would not part** with it for a **five dollar note.** Any one wishing for a glass of this kind will find it to be a prize. My experience is, when the AMERICAN AGRICULTURIST advertises anything it can be relied upon as being as represented.—[W. H. Fifield, Chicopee, Mass.

MORE THAN SATISFIED.

When I first saw your advertisement of a Telescope for the small sum of $1.50 in connection with $1.50 for the AMERICAN AGRICULTURIST I felt half suspicious that the instrument could not be so powerful as represented. But I said to myself, "I never knew that firm to misrepresent any article they advertised and I will try one." I did so, and **after several weeks' trial am more than satisfied.** Last Sunday I went upon one of the neighboring hills to take a look at the flood, and with that Telescope **I could see what was going on miles away, read the names of steamers passing up the river,** and the **signs in the city,** etc. I am at a loss to know how so good an instrument can be offered for so little money.—[Alpheus Darrison, Anacostia, D. C.

EQUAL TO A $15 INSTRUMENT.

Some time ago I received my French Achromatic Telescope by mail in good order, and feel **well pleased** with it. I think it fills the recommendation of your advertisement. **I have compared it with a field glass costing $15** and with **another Telescope** of English manufacture of 3 inches more length **costing $7,** and **consider the power of yours fully equal to either of the higher priced glasses.**—[George H. Northrop, Naugatuck, Ct.

SEES THIRTY MILES.

The French Achromatic Telescope I received of you gives **good satisfaction. Rocks, trees and bushes are distinctly seen** at the **top of Smoky Mountain** from our residence, **30 miles distant.**—[M. F. Johnson Maryville, Tenn.

SEES OBJECTS TWELVE MILES.

The Telescope **answers my expectations fully. I can see objects 10 or 12 miles away very plain** when it is clear, and the Moon looks a great deal plainer through it than it does to the naked eye. I don't see how you can afford to give so much for the amount of money you receive. Other concerns offer Telescopes which they claim are larger for less money, but it don't seem to me that they could be reliable; they must be cheaply and poorly made.—[Willis A. Warren, Abington, Ct.

WORTH FOUR TIMES ITS COST.

The French Achromatic Telescope ordered of you some time since is indeed a **superb instrument.** I have frequently observed the **nail-heads in a barn wall** at a **distance of half a mile. Four times its cost would not induce me to part with it.**—[Marquis P. Truax, Almo, Ind.

SEES OBJECTS FORTY MILES.

The French Achromatic Telescope is **fully as represented in every particular** and exactly the same in all respects if not **better than the ten-dollar Telescope** for sale in our **city stores.** I use it in my school and **my pupils see objects 40 miles off** quite distinctly as if right before us. **Can tell persons three miles off** and tell which direction the **vanes on barns** and **houses stand for 6 or 7 miles.**—[Erb Stoiner, Spring Mount, Pa.

TO CANVASSERS: For $6 we will send six yearly subscriptions to the AMERICAN AGRICULTURIST and the Telescope to the sender of the club. If you can not procure six subscribers send four subscribers at $1 each and add $1 in money ($5 in all), and we will send the Telescope post-paid. Subscribers taking any of our book offers count the same as for the AMERICAN AGRICULTURIST only.

Address all orders to

THE AMERICAN AGRICULTURIST, 52 and 54 Lafayette Place, New York.

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